

Amateur Radio

March 1996

Volume 64 No 3



Journal of the Wireless Institute of Australia



Full of the latest amateur radio news, information and technical articles including...

- **Review of Alinco DX-70 HF/6 m Transceiver**
- **Fox-Hunting Championships**
- **All Band Vertical**

Plus *lots of other articles and special interest columns*

DAYCOM

Australia's Amateur Radio SUPERSTORE!

It's available now!

The DAYCOM 1996 Catalogue

Forty pages of all the best in Amateur Radio,
lots of new products and new low pricing on many of your favourites.

Write, phone FAX or email for your copy now!

Our new email address: daycom@tbsa.com.au

Kantronics



KAMPlus with Packet, AMTOR, PACTOR and new G-TOR as well as CW and RTTY. 128K RAM - \$499



KPC-3 1200 baud VHF/UHF packet controller in a tiny box with low power consumption — \$249



KPC-9612 Dual port 9600 & 1200bps can operate two radios simultaneously. Now with K-NET option \$499

MFJ

Performance
you can afford!



MFJ1278B Multimode data controller, 10 modes including Packet, AMTOR, RTTY, Packet, CW, SSTV, FAX & more. Latest version with enhanced mailbox. \$649



MFJ1276 Packet-PACTOR controller for HF/VHF Packet & HF PACTOR. Best value PACTOR around! \$349



MFJ1270C The latest version of this popular VHF packet controller. 32K enhanced mailbox supplied. Best value packet on the market today! \$229

MIRAGE

VHF & UHF power amplifiers



Built in the USA to the highest standards, all Mirage amplifiers carry a full one year warranty from the factory with local service available. High power amplifiers are fitted with copper heatsink inserts. All Mirage amplifiers can be remote-controlled to permit mounting in a convenient location.

MR-A1015G	2mtr 10-150W with preamp	\$807
MR-A1035G	2mtr 10-350W with preamp*	\$1355
MR-B23	2mtr 2-30W no preamp	\$275
MR-B23G	2mtr 2-30W with preamp	\$365
MR-B215G	2mtr 2-150W with preamp	\$785
MR-B108G	2mtr 10-80W with preamp	\$470
MR-B1016G	2mtr 10-160W with preamp	\$785
MR-B2516G	2mtr 25-160W with preamp	\$660
MR-B5016G	2mtr 50-160W with preamp	\$660
MR-B1030G	2mtr 10-300W with preamp	\$1425
MR-B2530G	2mtr 25-300W with preamp	\$1425
MR-B5030G	2mtr 50-300W with preamp	\$1390
MR-B1060G	2mtr 10-600W with preamp*	\$2270
MR-B2560G	2mtr 25-600W with preamp*	\$2270
MR-B5060G	2mtr 50-600W with preamp*	\$2270
MR-D15N	70cm 1-15W no preamp	\$415
MR-D26N	70cm 2-60W no preamp	\$585
MR-D100ATVN	70cm 1-52W for ATV	\$860
MR-D1010N	70cm 10-100W no preamp	\$860
MR-D1010ATVN	70cm 10-100W for ATV	\$860
MR-D3010N	70cm 30-100W no preamp	\$794

* Amplifiers marked * require 28V DC supplies, all 2mtr amplifiers have SO239 connectors, UHF types have 'N' connectors.

NEW NEW NEW NEW
from

KENWOOD

TS-870S HF transceiver with DSP



- IF stage digital signal processing
- No option filters required
- Dual mode noise reduction
- Beat canceler
- Auto notch filter
- Variable AGC
- Selectable voice equalizer
- Speech processor
- High speed com ptt control
- 100W output (SSB, CW, FM, FSK)
- 100kHz-30MHz receiver coverage
- Built-in auto antenna tuner
- 2 antenna sockets
- Dual VFO's with 100 memory channels

Call for introductory specials!

**SUPERSTORE
SUPERSPECIAL!**

All the HF features
of the Kenwood
TS-50S!

Small size, full
100W output,
flexible programming and lots
more can be yours
this month for just:



\$1599

DAYCOM Communications Pty. Ltd.
44 Stafford Street, Huntingdale 3166

Bankcard, MasterCard
& Visa all welcome

Phone (03)9543-6444
FAX (03)9543-7238

Amateur Radio is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

PUBLICATIONS COMMITTEE

Editor

Bill Rice VK3ABP

Production Editor

Bill Roper VK3BR

Senior Technical Editor

Peter Gibson VK3AZL

Technical Editors

Evan Jarman VK3ANI

Gil Sones VK3AUJ

Bob Teit VK3UI

Marketing

Norm Eyres VK3ZEP

Bruce Kendall VK3WL

Contributing Editor

Ron Fisher VK3OM

ASSOCIATE EDITORS

Technical

David Brownsey VK4AFA

Don Graham VK6HK

Peter O'Connor VK4KIP

Phil Steen VK4APA

Roy Watkins VK6XV

WIA News

Roger Harrison VK2ZRH

PROOF READERS

Alan Doble VK3AMD

Jim Payne VK3AZT

Graham Thornton VK3IY

John Tutton VK3ZC

DRAFTING

Vicki Griffin VK3BNK

Bill Roper VK3BR

ADVERTISING

June Fox

CIRCULATION

Sue Allan

Rita Trebilco VK3HER

TYPESETTING AND PRINTING

Industrial Printing and Publishing Pty Ltd,

122 Dover Street, Richmond, VIC 3121.

Telephone: 9428 2958

MAIL DISTRIBUTION

Mail Management Australia Pty Ltd,

86 Herald Street, Cheltenham, VIC 3192.

AMATEUR RADIO CORRESPONDENCE

All contributions and correspondence

concerning the content of *Amateur Radio*

should be forwarded to:

Amateur Radio

PO Box 2175

Caulfield Junction VIC 3161

REGISTERED OFFICE

3/105 Hawthorn Road

Caulfield North VIC 3161

Telephone: (03) 9528 5962

Fax: (03) 9523 8191

Business Hours: 9.30 am to 3 pm weekdays

Deadlines Editorial and Hamads

April 11/03/96

May 08/04/96

June 13/05/96

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

© Wireless Institute of Australia 1996

CONTENTS

Technical

Equipment Review - Alinco DX-70 HF/6 Metre All Mode Transceiver 5

Ron Fisher VK3OM

All Band Vertical 10

Keith Rehe VK4KL

Technical Abstracts 13

Gil Sones VK3AUJ

Random Radiators 15

Ron Cook VK3AFW and Ron Fisher VK3OM

Some Useful Wire Antennas for HF - Part 1 22

Rob S Gurr VK5RG

General

RAOTC Special VK6GM 92nd Birthday Celebration 9

Clem Patchett VK6CW

1995 WIA Victorian Fox-Hunting Championships 11

Jack Bramham VK3WWW

Book Review - Practical Transmitters for Novices 17

Evan Jarman VK3ANI

HF DF 18

Lee Hitchins VK6HC

How to ... Load up a Tree or Confuse Your Contact 19

Steve Bushell VK3HK

The South East Radio Group (SERG) Annual Convention 20

Alex Edmonds VK3BQN

International Travel Host Exchange 25

Ash Nallawalla VK3CIT

Columns

Advertisers Index 56

ALARA 26

AMSAT Australia 30

Awards 31

Club Corner 32

Contests 33

Divisional Notes 36

VK1 Notes 36

VK2 Notes 36

VK3 Notes 36

VK6 Notes 37

VK7 Notes 37

Editor's Comment 2

Federal QSP 2

Hamads 54

HF Predictions 52

How's DX? 38

How to Join the WIA 31

Intruder Watch 43

Morse Practice Transmissions 48

Over To You 42

Packet World 44

Pounding Brass 45

QSP News 26

Repeater Link 46

Silent Keys 35

Spotlight on SWLing 48

Stolen Equipment 43

Technical Correspondence 55

Update 48

VHF/UHF - An Expanding World 49

What's New 51

WIA News 3, 16, 42

WIA - Divisional Directory 56

WIA - Federal Directory 2

Cover

A special Radio Amateur Old Timers Luncheon was held on 29 August 1995 to celebrate the 92nd birthday of George Moss VK6GM, the WIA's Western Australia Division's longest serving member (see article on page 9). Left to right, Cliff Bastin VK6LZ, Division President, George Moss VK6GM, Neil Penfold VK6NE, WIA Federal President.

(Photo by Les Taylor)

BACK ISSUES

Available, only until stocks are exhausted, at \$4.00 each (including postage within Australia) to members.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society
Founded 1910

Representing the Australian Amateur Radio Service -
Member of the International Amateur Radio Union
Registered Federal office of the WIA:
3/105 Hawthorn Rd, Caulfield North, Vic 3161

All Mail to:

PO Box 2175, Caulfield Junction, VIC 3161

Telephone: (03) 9528 5962 Fax: (03) 9523 8191

Business Hours: 9.30 am to 3.00 pm on weekdays

Federal Secretary
Peter Naish VK2BPN

Office Manager
Donna Reilly

COUNCIL

President
VK1 Federal Councillor Neil Penfold
VK2 Federal Councillor Richard Jenkins
VK3 Federal Councillor Michael Corbin
VK4 Federal Councillor Rose Marren
VK5 Federal Councillor Bob Allen
VK6 Federal Councillor Bruce Hedland-Thomas
VK7 Federal Councillor Jim Forsyth

VK6NE
VK1RJ
VK2YC

EXECUTIVE

Peter Naish
Lance Bickford
Rowland Bruce
Neil Penfold

VK2BPN
VK4ZAZ
VK5OU
VK6NE

FEDERAL CO-ORDINATORS

AMSAT: Graham Ratcliff
Awards: John Kelleher
Contests: Peter Nesbit
Education: Brenda Edmonds
EMC and Standards: Roger Harrison
FTAC: John Martin
Historian: John Edmonds
Honorary Legal Counsel: George Brzostowski
IARU: Kevin Olds
Int'l Travel Host Exch: Ash Nallawalla
Intruder Watch: Gordon Loveday
Media: Roger Harrison
QSL Manager (VK9, VK0): Neil Penfold
Videotapes: Bob Godfrey
ITU Conference and Study Group: David Wardlaw
WICEN: Leigh Baker

VK5AGR
VK3DP
VK3APN
VK3KT
VK2ZRH
VK3KWA
VK3AFU
VK1GB
VK1OK
VK3GT
VK4KAL
VK2ZRH
VK6NE
VK4BOB

SMA LIAISON TEAM

Roger Harrison
David Wardlaw
Neil Penfold

VK2ZRH
VK3ADW
VK6NE

Editor's Comment

Early Survey Findings

Last month I did a little "pot-stirring" to bring in some of you who had not yet sent in your survey sheets on the popularity of otherwise of the many columns and items we publish in Amateur Radio. We also extended the closing date to 28 February, and a good few additional responses have been coming in. The survey was also mentioned at the Federal Council meeting held over the 3-4 February weekend and one comment heard was that there should be a survey like this every year.

So what are we learning from a preliminary assessment of your responses? The first and very definite finding is that you want more construction articles. 72% want more, only 2% want less. Technical theory articles are nearly as popular, 38% wanting more and less than 3% wanting less. General interest articles came third (33% more, 3% less).

Further down the list, no-one wanted less Hamads, although only 7% wanted more. Only about 1% wanted to read more "Editor's Comment" and 4% wanted less. Only 2% wanted more "QSLs from the WIA Collection" and 34% wanted less. 5% wanted more "Contests" but 31% wanted less. The same figures applied to "Awards".

Overall, I think we can deduce that our present mixture of material is not too greatly out of line with readers' expectations. Obviously we need to find more space for more technical articles, which raises two problems.

Firstly we need more articles to be written, but that means, secondly, we have to reduce space occupied by the less-popular material. This can be achieved in three ways. We can use smaller type for the longer columns, their authors can write a little less, or the editorial "blue pencil" can be used more ruthlessly.

Of these, I think Plan B is the best. Remember the old proverb that anyone can say in a thousand words what a literary genius can say in a hundred! I'm not suggesting a 90% reduction in word-count, but maybe 10%? Maybe 20%? Maybe!

One final observation. The approximate average age of the survey respondents so far is 59 years. Where are all the younger amateurs? Mostly on the Internet, I suspect. But let's not start on that; my space is full already.

Bill Rice VK3ABP

Editor
ar

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of *Amateur Radio*. A photocopy is available on receipt of a stamped, self addressed envelope.

Institute seeks use of AX prefix on Australia Day

Early in January, the Federal WIA approached the Spectrum Management Agency (SMA) asking that Australian amateurs be allowed to use the alternative call sign prefix 'AX' on Australia Day, 26 January 1996, as part of the national celebrations.

Sadly, the SMA refused and when approached to review their decision in mid-January, the WIA application was again rejected. The SMA said that it did not consider Australia Day met the guidelines for use of the AX prefix by Australian

amateurs. As these guidelines were drafted quite a few years ago, the WIA is drawing up a submission to have them reviewed.

Our national day is the focal point for many activities across the country. Municipal councils and members of parliament take the opportunity to recognise the contributions made by individuals in their municipalities and electorates. The Department of Immigration and Ethnic Affairs conducts citizenship ceremonies through municipal

councils, when our newest citizens pledge allegiance to Australia.

Other Australia Day celebrations this year ranged from formal dinners through to flag-raising, arts competitions, family entertainment, fairs and fireworks displays.

The Australia Day Council and the Local Government Association, in a joint initiative known as "Australia Consults", is conducting a forum over the next three Australia Days. Hosted by local government councils around the country, these forums will discuss national identity issues as we head towards the centenary of federation in 2001.

The WIA believes Australia's amateurs should be able to celebrate our national day in the one way unique to amateurs – the use of the AX prefix – and at the same time publicise Australia Day around the world while operating on the high frequency bands, or the OSCAR satellites, for example.

The WIA was disappointed that a favourable decision could not be reached in time for Australia Day 1996 and will pursue a review of the now ageing guidelines for use of the AX prefix through the foreshadowed submission.

10 gigahertz gets a Guernsey

The 10 GHz band has seen a surge in activity in recent years, with a world record being set by Roger Bowman VK5NY and Wally House VK6KZ in December 1994, then a 10 GHz moon-bounce record being established last year by Lyle Pattison VK2ALU. Then, in a flurry of New Year activity, the previous VK3-VK5 terrestrial distance record was broken – twice within half an hour – in January, this year.

At 1125 EDT on 13/1/96, Alan Devlin VK3XPD, on Melbourne's Mt Dandenong, accomplished a 5x4 two-way contact with Trevor Niven VK5NC, at Robe in South Australia, over a path of 500.8 km – a new record. Later, at 1153 EDT, Alan made contact with Roger Bowman VK5NY, at Mt Magnificent in South Australia, exchanging 5x2 signals under deteriorating conditions, extending the just-established record to 657.1 km.

The distances have been confirmed by FeTAC chairman, John Martin VK3KWA, who adjudicates VHF/UHF records. Both contacts have additional significance in that they were entirely over land, unlike the previous record-setting contacts.

The previous VK3-VK5 record was set in December 1994 by Russell Lemke VK3ZQB, operating from the beach front at

Port Fairy in Victoria, and Roger Bowman VK5NY at his Mt Magnificent location, for a distance of 466.4 km.

Equipment used by the operators during January's record-breaking contacts is based on the German-designed DB6NT transverter which feeds into a 144 MHz intermediate frequency. Power output levels on 10 GHz were below one watt and 600 mm diameter dishes were used.

The 10 GHz gang in VK3 and VK6 are lining up for a crack at setting a new world distance record for the band. Wally House VK6WG is to set up a beacon at his West Australian location as a first step.

**Help stamp out
stolen equipment
– keep a record of
all your equipment
serial numbers in
a safe place**

Wilkinson Award

The holders of the 10 GHz terrestrial world distance record, Roger Bowman VK5NY and Wally House VK6KZ, have been awarded the prestigious Ron Wilkinson award by the WIA.

The WIA Federal Council voted at its February meeting to give Roger and Wally the Ron Wilkinson Award for their achievement in setting the 10 GHz (3 cm band) world record in 1994 and for their contribution to VHF/UHF techniques over many years.

The award is named in memory of the late Ron Wilkinson VK3AKC, who set a number of VHF/UHF records himself over the post-war decades until the mid-1970s, including work on 1296 MHz moon-bounce.

The award is for special achievement in any facet of amateur radio.

Congratulations to Roger Bowman VK5NY and Wally House VK6KZ.

FM on the HF bands

While the current licence privileges permit the use of FM transmission modes on all the HF bands, operators are cautioned that different bandwidth restrictions apply to the bands below 29 MHz, to what is permitted above that.

While voice FM operation on the VHF and UHF bands has been popular for 25 years, the mode employed has generally been so-called "wideband" FM (wideband to some, but narrow-band to VHF/UHF enthusiasts), with a nominal transmission bandwidth of 16 kHz, and identified in the licence specifications as 16K0F3E (for straight frequency modulation) and 16K0G3E (for phase modulation).

The present Technical Licence Specifications restrict the use of 16K0F or 16K0G modulation modes on bands below 30 MHz to the 29.0-29.7 MHz segment of the 10 metre band.

On the other HF bands, 6K00F or 6K00G modes ("narrow-band" FM) are permitted, but here lies a stumbling block - don't try to use your "store-bought" transceiver, it's unlikely to produce legal FM transmissions. This is no reflection on the transceiver manufacturers, who produce their rigs for world markets. The accompanying table tells the story.

Specifications for some 24 popular transceivers from the three main manufacturers have been compiled here (courtesy of Federal Technical Advisory Committee chairman, John Martin VK3KWA). Without making adjustments, at the very least, or at worst having to modify a rig, the occupied bandwidth of these rigs would be at least twice as great as the 6 kHz permitted below 29 MHz.

To get an idea of the transmitter's occupied bandwidth of a commercial rig featuring FM mode operation, look at the receiver filter bandwidth for FM reception. From the table you can see that, for many cases, this is 15 kHz at the -6 dB point; the narrowest is 8 kHz - still wider than the 6 kHz permitted in Australia.

But what about where the deviation is given as ± 2.5 kHz? If you think this results in a transmission bandwidth of 5 kHz, go back to your amateur textbooks (pass in your licence, re-sit the exam...). The bandwidth of an FM transmission depends not only on the deviation, but the highest, modulating frequency and a factor called the modulation index.

The majority of commercial rigs, as the table shows, are specified for ± 5 kHz deviation, some for ± 2.5 kHz. Either way, as they are, they can't legally be used below 29 MHz.

A transceiver may be adjusted to

produce 6 kHz occupied bandwidth on FM. In FM mode, the mic gain control acts to set the audio level presented to the transmitter limiter circuit, but does not control the peak deviation; the deviation adjustment is

wide receiver filter bandwidth which yields poor audio. Transmit and receive bandwidths need to be matched.

A rig specified for ± 2.5 kHz deviation and an 8 kHz receiver filter could have the deviation adjusted slightly to get the transmission bandwidth down to 6 kHz, and probably get acceptable results -

provided the rig on the other end had an 8 kHz receive filter. However, working anyone with a 15 kHz filter would bring reports of "inadequate deviation".

Experimenting with FM on the HF bands below 29 MHz is for the homebrew enthusiast or the amateur prepared to adjust or modify (and measure) his store-bought rig. You can't just flick to "FM" and conduct a contact.

John Martin reports hearing a station using FM on 3693 kHz, whose transmission bandwidth appeared to be on the order of 16 kHz wide (3684-3702 kHz) - a double breach of the permitted conditions.

Transceiver Model	Max. deviation (kHz)	Receiver (kHz) @ -6 dB	bandwidth @ -60 dB
TS430	± 5	15	32
TS140, TS450, TS690, TS50	± 5	12	25
TS850, TS950	± 5	12	24
IC765, IC781	± 5	15	30
IC725, IC735	not specified	15	30
IC728, IC729, IC736, IC738	not specified	12	30
IC751	± 5	not specified	not specified
IC706 (normal FM)	not specified	>12	30
(narrow FM)	not specified	8	not specified
FT650 (normal FM)	± 5	15	30
(narrow FM)	± 2.5	8	30
FT747	± 2.5	8	19
FT757, FT767	± 5	15	30
FT890	± 2.5	not specified	not specified
FT990, FT1000	± 2.5	not specified	not specified

TS - Kenwood IC - Icom FT - Yaesu

FM mode specifications of popular HF transceivers

always an internal preset pot. But, you'd need the necessary test equipment (at least a deviation meter) to achieve the proper result.

However, assuming a 6 kHz transmitted bandwidth could be achieved, the result on reception is compromised because of the

WIA Federal to embark on marketing campaign

At a meeting held in Melbourne over the weekend of 3-4 February, the Federal Council of the WIA heard a number of reports covering membership growth and retention, and advertising and marketing plans.

At its October meeting last year, the Federal Council adopted recommendations to form three Council working groups: Strategic Planning, Marketing and Advertising, and Membership Growth and Retention. To some extent, the operations of each working group impinge on the others, but the Council felt that this would help develop a cohesive, and better coordinated, approach.

Reports discussed by the Council at the February meeting, covered a variety of proposals for marketing amateur radio activity, membership of the WIA Divisions,

and the variety of services and activities conducted by both WIA Federal and the Divisions.

Proposals being considered include: boosting the 'visibility' of amateur radio in the community in various ways, membership cards, membership 'bonus' schemes and competitions, a special youth membership grade, changes to membership grades, promoting the WIA among computer enthusiasts and other technologically aware groups, etc.

The working groups are continuing to refine the proposals and to integrate already existing activities to better promote amateur radio and the Institute. As proposals are investigated and mature, the Council intends to introduce them at the earliest opportunity that each can be initiated. Keep a watch on WIA News.

■ Equipment Review

Alinco DX-70

HF/6 Metre

All Mode Transceiver

*Reviewed by Ron Fisher VK3OM**



The Alinco DX-70 transceiver.

That's right, Alinco is now in the business of producing HF-transceivers. Well known for their VHF and UHF hand-held and mobile equipment, this is their first piece of HF gear. As we will see, they are jumping in at the deep end and taking on the "big three" head on.

The DX-70 is designed to compete with the Kenwood TS-50S and the ICOM IC-706. Yaesu are yet to throw a competitor into the ring in this field but, no doubt, will do so very soon.

The DX-70 is essentially the same size as the TS-50S and the IC-706 and is right in the middle as far as weight is concerned. The TS-50S is the heavyweight at 2.9 kg, the DX-70 is 2.7 kg and the IC-706 the lightest at 2.5 kg. All these transceivers feature 100 watts output on the HF bands up to 30 MHz and full general coverage receivers. However, the DX-70 adds six metre coverage with 10 watts output and the IC-706 provides six metres with 100 watts output and two metres with 10 watts output. Prices run in reverse order. The TS-

50S will cost you \$1599, the Alinco DX-70 \$1799, and the IC-706 \$2478.

One feature, though, that sets the Alinco and ICOM apart from the Kenwood TS-50S is that they both feature removable front panels. I will look later at the mechanical set up of the Alinco's front panel compared to the ICOM.

Alinco DX-70 Features and Facilities

The DX-70 is ideal for both mobile and fixed station use. The remote front panel would make a mobile installation much easier. However, one cable is required to connect the front panel of the transceiver to the main chassis, and a second cable is needed to extend the microphone as the only microphone connector is located on the main transceiver chassis.

Unfortunately, the DX-70 uses four in-line multi-pin connectors, two on the panel and two on the main chassis. I must admit I have never been too sure just how to disconnect these. Do you pull on all the

wires at the same time hoping they won't rip themselves out of the plug? Or what? Well, that's a problem facing you with the DX-70. Alinco need to put this right. Perhaps they should take a good look at the ICOM IC-706. ICOM got it right the first time.

Now, let's look at what the DX-70 has to offer. Briefly, it has almost everything that current SSB transceivers have and, in some cases, more. Let's see what you get. Twin VFOs, 100 memories, a full general coverage receiver tuning from 150 kHz to 30 MHz and from 50 to 54 MHz, an effective IF shift, a non-adjustable noise blanker, both receiver and transmitter offset tuning, four selectivity selections (9 kHz for AM and FM, 2.4 kHz for SSB and wide CW, 1 kHz for CW and narrow SSB, and 500 Hz for narrow CW), a receiver pre-amplifier plus -10 and -20dB attenuation, three transmitter power levels (an internal switch selects 100 or 50 watts on HF while a front panel button selects 100 (or 50) watts and 10 watts - power output on 6 metres is 10 watts on high and 1 watt on low power), a speech processor for added punch on voice modes, and full break-in for CW operators.

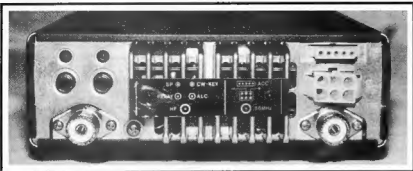
In addition, the AGC can be switched for fast or slow recovery (but cannot be switched off), both "Band" and memory scanning is available, and the transmitter final amplifier is cooled with a small but very effective fan which is thermostatically controlled so it only comes on when required.

Many of the transceiver's functions are controlled via the "Function" button. This is done in two ways. Firstly a single push of the "Function" button gives access to the second function on several controls. These include noise blanker on/off, AGC fast/slow, memory to VFO, memory write and priority channel select. Then, by giving the "function" button a quick push followed by holding it down for one second, the following "set-up" functions become available: CW offset setting, LCD brightness, automatic power off function, automatic USB/LSB selection (correct sideband for band in use), speech compressor on/off, CW break-in delay time and several others.

The DX-70 has two antenna sockets, one for HF and one for six metres - a very handy facility.

DX-70 On The Air

To put the DX-70 on the air you need only a 13.8 volt DC power supply, either AC operated or a standard car battery for mobile or portable operation, and an antenna. The supplied microphone is fitted with a standard eight pin connector and this actually plugs into the main transceiver



The rear panel of the DX-70, clearly showing the separate antenna SO-239 socket for 6 metres.

chassis with the microphone lead going through a slot in the front panel. This certainly makes for a neat looking installation and, with the use of the normal eight pin connector, allows you to use an alternative microphone with very little effort.

The main tuning control is very smooth, but perhaps a trifle small. The tuning rate is 5 kHz per knob revolution, which feels just right. Rotating the knob faster than about one revolution per second speeds up the tuning rate to about 20 kHz per revolution. Band changing is selected via the "MF SEL" button. The first push of this brings up the memory channel number. Push two brings two icons above the leading two MHz figures and you can then use the "MULTI-FUNCTION" knob to select each amateur band in turn. A third push of the "MF SEL" button allows you to select each MHz in sequence for general coverage receive use, while a fourth push brings in selection for 100 kHz steps. A fifth push then puts things back to normal.

This operation is one of those things that takes time to explain but, in fact, not long to do. However, in this area I think the TS-50S wins out for simplicity. If you are contemplating a lot of band changing, you can, of course, leave it in the amateur band selection mode. When changing bands you will always come back to the last used frequency on that particular band which is a very handy feature.

The received audio quality on the internal speaker was very good on SSB but a bit thin on AM. A good quality external speaker made a very noticeable improvement here and was certainly worthwhile on SSB also. The preamp and attenuators are selected in sequence by pushing the "RF" button.

I found that the noise blanker often introduced a fair amount of distortion. There may be an internal preset level control but no mention is made of this in the instruction book. I did not actually use the transceiver mobile but I feel that, while the

blanker would reduce ignition noise to a low level, the distortion on strong signals could be a problem.

There is a separate readout for the RIT which has a ± 1.4 kHz range. While on the subject of the display, the main frequency readout is to 100 Hz. The "S" meter is a bar graph which doubles as a relative power output indicator when in transmit mode. No other metering is provided. There are many other status indicators included in the display, including sideband in use, RIT/XIT, VFO A/B, noise blanker on, AGC slow/fast, pre-amp attenuator status, etc. Illumination of the LCD is adjustable via the "function" set-up procedure.

The selectable selectivity was great for eliminating QRM. The 1 kHz band width is actually somewhat wider than specified which made it ideal for narrow SSB reception, particularly with the IF shift slightly off-set.

DX-70 On Transmit

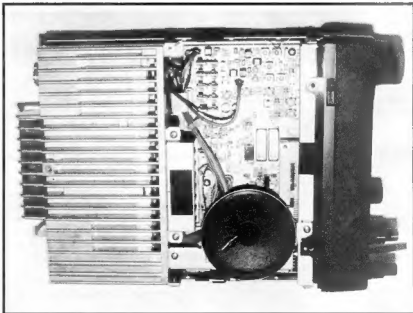
What better place to try the transmit capability of the DX-70 than on the 14.116 MHz Traveller's Net. Peter and Roy can really pick the good ones from the not-so-good. They gave the DX-70 a very clean bill of health. The only slight problem was that the speech processor produced some audible distortion, so don't use it on local contacts. The rig delivered a full 100 watts output but I noted that it was fairly critical of the correct load impedance. Output power was reduced with an SWR above 1.5 to 1. CW operators are very well catered for. You can choose full or semi break-in, and also zero-in the transmit signal on the signal you are listening to. CW keying was found to be very clean.

Alinco EMS-42 Microphone

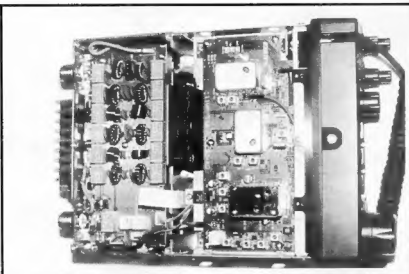
This is the microphone supplied with the DX-70 as standard equipment. It has a low impedance dynamic insert which produces very clean audio quality. There are three micro-switches inside, two for the up/down buttons on top of the casing and one on the side actuated by the PTT button. The shape of the case fits the hand very well and the up/down buttons on top are easy to operate. The verdict is that it is a very nice little microphone which is easy to use.

DX-70 On Test

Firstly, I checked the power output and current drain on each band. Maximum output in CW mode with 13.8 volts DC supplied to the transceiver was:



Top view of the DX-70 with the cover removed.



Bottom view of the DX-70 with the covers removed. Note the centrally mounted cooling fan.

Band	Power Out	Current Drain
160	112 watts	18 amps
80	118 watts	18 amps
40	110 watts	16.5 amps
30	105 watts	15 amps
20	100 watts	14 amps
17	100 watts	14 amps
15	105 watts	14.5 amps
13	95 watts	14 amps
10	95 watts	14 amps
6	9.5 watts	2.6 amps.

In the low power position, the power output averaged 18 watts over all the HF bands and was 2.5 watts on six metres. Current drain on the HF bands averaged about 7 amps and on six metres it was 1.8 amps. PEP output on SSB was the same as the CW readings, as was FM on 10 and 6 metres. The AM output (for the 160 operators) was about 25 watts.

I then carried out tests to estimate the transmitter inter-modulation distortion. Again, the figures obtained were estimated on a comparative basis with a transceiver

with known figures of distortion and were measured with normal SSB modulation. The DX-70 produced a figure of -20 dB which is 2 dB worse than the IC-706. There was very little difference with the processor switched in or out; however, the processor did produce quite audible distortion and was generally not liked by listeners.

Next, the transmit audio response was measured in the SSB mode (see Fig 1). The method used was the same as detailed for the IC-706 review in the November 1995 issue of *Amateur Radio*. Basically, the response shows a smooth bass roll-off with the -6 dB point at about 450 Hz. At the top end the -6 dB point was at 2.9 kHz. The mid-band ripple did not exceed +/- 1.5 dB. Most listeners found the audio response very pleasing with the exception of the distortion produced by the compressor.

There was a difference in the response between upper and lower sideband with

slightly more bass on lower sideband. In retrospect, I feel that the upper sideband response would have sounded slightly better if it had been shifted nearer to the filter to match the lower sideband response. Both carrier and sideband suppression were excellent, each being in excess of -60 dB down.

Receiver Tests

The first test was to check the S meter calibration. In common with the TS-50S and the IC-706, the S meter is a series of bars on the LCD and is calibrated at S1 to S9 and then +20, 40 and 60 dB. There are actually 16 bars between S1 and S9. I measured the calibration at 14.2 MHz and then checked the input required to produce S9 on each amateur band. The results are as follows:

S Unit	Preamp On	Preamp Off
S1	2.3 μ V	6.8 μ V
S2	2.6 μ V	8.0 μ V
S3	3.6 μ V	11 μ V
S4	4.6 μ V	14 μ V
S5	5.8 μ V	18 μ V
S6	7.8 μ V	25 μ V
S7	10.3 μ V	37 μ V
S8	10.9 μ V	49 μ V
S9	20.0 μ V	60 μ V
+20	120 μ V	300 μ V
+40	500 μ V	1800 μ V
+60	2000 μ V	5000 μ V

The signal required to produce S9 on each amateur band with the pre-amp in operation was measured as follows:

Band	Input for S9
160	21 μ V
80	20 μ V
40	20 μ V
30	20 μ V
20	20 μ V
17	24 μ V
15	24 μ V
13	24 μ V
10	25 μ V
6	17.5 μ V.

The switchable attenuator provides -10 and -20 dB of attenuation, and these were checked as being spot on. The received frequency response on SSB was the same as the transmit response shown earlier.

I next measured the response for AM receive with the following results:

Frequency	Response
100 Hz	-14 dB
200 Hz	-6 dB
400 Hz	-2 dB
600 Hz	-0.5 dB
1.0 kHz	-0 dB
1.5 kHz	-1 dB
2.0 kHz	-2 dB
2.5 kHz	-3 dB
3.0 kHz	-5 dB
3.5 kHz	-10 dB
4.0 kHz	-13 dB.

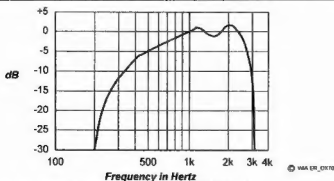
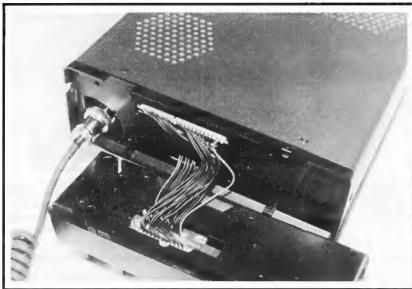


Fig 1 - A plot of the transmitted audio response of the DX-70, using USB on 14.2 MHz with no compression and no ALC.



A close-up view of the front panel unclipped from the DX-70 showing the connecting cabling and how the microphone plugs directly into the main chassis.

Interestingly, this response is within a dB or so of the ICOM IC-706. Perhaps they both use the same filter. With a good quality external speaker the AM quality is quite acceptable.

Next on the list of tests was audio power output and distortion levels. Maximum audio output into an 8 ohm load was measured at 2.9 watts at 20% distortion. The 10% distortion level was produced at 2.4 watts which easily exceeds the specified 2 watts. Product detector distortion for SSB and CW was an excellent 0.45%. Distortion on AM at high modulation levels was fairly high at 10% for 80% 1 kHz modulation.

Selectivity

The DX-70 has three and a half positions of selectivity. Let me explain. Position one is 9 kHz for AM and FM reception, position two is 2.4 kHz for SSB and narrow AM, position three is 1 kHz for narrow SSB and wide CW, and the "half" is provided by the 500 Hz wide audio filter which augments the 1 kHz filter.

In practice these all work very well, but they are all somewhat wider than the specification might have you believe. The 1 kHz filter is nearer to 1.6 kHz at -6 dB and the 2.4 kHz filter is about 2.7 kHz at -6 dB. On the surface this isn't too bad, but the selectivity at -60 dB is wider than you would expect from a top grade crystal filter.

Sensitivity

I measured the sensitivity at 14.2 MHz and at 51 MHz. 14.2 MHz SSB gave a figure of 0.2 μ V for a 10 dB SINAD. This is slightly better than the specified 0.25 μ V for

10 dB S/N. At 51 MHz the measured sensitivity is quite a bit better than the specification at 0.12 μ V for 10 dB S/N. I noted that the sensitivity was noticeably down with the preamp switched out.

Overall the DX-70 performed very well. It is not a substitute for a top grade transceiver but I feel that for general home-station use and mobile operation it would prove a very useful rig.

DX-70 Instruction Manual

The instruction manual runs to a surprising 100 pages. A full circuit diagram is included as a loose supplement. The book is divided into seven chapters plus an appendix and these cover the following subjects:

Chapter 1. Getting Started. This covers the initial setting up of the transceiver such as connecting the DC supply, key, microphone, external speaker, etc.

Chapter 2. Communication. This tells how to set up the transceiver for transmission and reception in the various modes, including packet operation.

Chapter 3 and Chapter 4. These describe the memory and scanning facilities of the transceiver.

Chapter 5. Chapter 5 is interestingly called "Interference Reducers". It covers the operation of the IF Shift, use of the narrow filters for SSB and CW, RIT and XIT (transmitter offset), noise blanker and attenuator.

Chapter 6. This chapter shows how the initial "set up" system is programmed. The options were explained earlier.

Chapter 7. Covers several adjustments such as microphone gain, CW sidetone, volume, etc.

The instruction manual is a generally well written and presented book. I give it eight out of ten.

Alinco DX-70 Conclusions

For their first attempt at an HF transceiver, I give Alinco top marks. They have produced a transceiver that would please most operators. It is in the lower price bracket and its general performance is similar to other rigs under \$2000. However, there are a few rough edges. The remote front panel is far too fiddly to use frequently. Alinco need to clean this up. The mechanics of the tuning control need improving with perhaps a slightly larger knob and a better system to adjust the tension. Also, I feel that a basic mobile mounting bracket should be included as a standard feature. However, I am sure that the DX-70 will prove to be very popular.

One thing that I cannot comment on is the service backup that the Australian distributors can provide. If I can obtain any information on this aspect I will pass it on to readers. On the same subject, I do not know if workshop manuals are available in Australia. You might need to take some of these factors into account when considering your purchase.

The review DX-70 was kindly provided by Strictly Ham Pty Ltd of 14 Church Street, Bayswater, Victoria.

**24 Sugarbush Road, Beaconsfield Upper, VIC 3808*

AR

**Don't buy stolen equipment –
check the serial number
against the WIA Stolen
Equipment Register first.**

■ People RAOTC Special VK6GM 92nd Birthday Celebration

Clem Patchett VK6CW supplied the following material, most of which was broadcast on the Radio Amateur Old Timers RTTY news transmission.*

What an outstanding success the August 1995 meeting of RAOTC was, the special VK6GM birthday celebration. There was a very pleasing roll-up for this notable occasion, with about 29 Old Timers, YLs, XYLs and friends honouring George VK6GM for his 92nd birthday which he celebrated on 2 September 1995.

The formal part of the get-together commenced with WIA Federal President Neil Penfold VK6NE congratulating George on his achievements both in amateur radio and in reaching the age of 92. Neil's remarks were followed by a **This is Your Life** style summary of George's radio and teaching career, which was presented very ably by Cliff VK6LZ. Both Neil and Cliff then made a presentation on behalf of the WIA in recognition of George's long association both with the WIA and amateur radio and his contributions to each.

Mr Les Taylor, professional photographer and son of Frank VK6JK, kindly made himself available and took a number of photographs of the proceedings.

Following the formal part, Neil and several others had to make their farewells and return to their normal working conditions whilst the remainder took some lunch and liquid refreshments. All agreed that it was a "top" turnout and certainly supported all the time and effort that Clem



George Moss VK6GM and his Award. (Photo by Les Taylor)

VK6CW had put into its organising.

The following is the address delivered by Cliff VK6LZ.

GEORGE ARTHUR MOSS
- These Are Your Lives
Wireless Institute of Australia

You joined the Western Australian Division in 1925 and you are its longest standing member. You served the WA Division as Secretary during 1935/36, and as President in 1946 and 1947. In 1938 you were named as the inaugural winner of the

RENEW your membership and you could WIN



**this ICOM IC-706
Txcvr worth \$2478**

**HF + 50 + 144 MHz
ALL MODES**

**100 W HF-6m/10 W 2m
Home/portable/mobile**

WHO'S ELIGIBLE?

- current members who renew, or have already renewed, between 1/6/95 and 31/5/96
- persons who join, or have already joined, between 1/6/95 and 31/5/96
- current members who are on a 3-year membership
- life members
- all grades of membership

The IC-706 Txcvr prize, generously donated by Icom (Australia), will be awarded by way of a draw and the result published in July 1996.



RENEW YOUR MEMBERSHIP

Further details are available from your Division, see contact details on p.3 of this issue.

Carl Cohen trophy for amateur radio research in WA.

During the same year you attended the World Radio Convention in Sydney as the WIA delegate at the invitation of the NSW Government.

Your contribution to amateur radio was recognised in 1965 when you were made a life member of the WIA.

Amateur Radio

You first became interested in communications and things electrical at the end of WWI. In 1923 you built your first wireless, a crystal set in order to receive the time signal and weather report from the Wireless Hill Coastal Radio Station VIP. For this you were required to obtain a TEN SHILLING experimenter's licence.

During this period you decided to become a Radio Amateur. In order to practice Morse with a friend who lived several houses away, you constructed a device which enabled you to transmit signals utilising the 250 volt power mains. This relied on a couple of home made foil and paper capacitors to isolate the mains from the headphones. However, you both managed to survive.

In 1926 you passed the amateur licence examination, and were issued with the call sign A6GM. In the early 30s your station broadcast music three nights a week, and became extremely popular due to your ready access to the latest record releases through your employer.

Employment

You first obtained paid employment in 1921 with a firm specialising in piano maintenance. Your mastery of tuning was materially assisted by your recently acquired knowledge of beating frequencies.

In the late 20s you took charge of the Radio Servicing Division of one of Perth's largest musical establishments, shortly before it opened a commercial radio station. In order to participate in its operation, you obtained a Broadcast Station Operator's licence.

Education

You commenced your academic career in 1938, when you took over the lecture program in radio theory at the Perth Technical College, and the following year you inaugurated radio apprentice training in WA.

With the onset of WWII, you were seconded half-time to teach Army Radar Trainees, and you obtained your First Class Commercial Operator's Certificate in 1942 in case your services should be required.

With the end of the war you obtained your Diploma in Communications and became a full time lecturer, an occupation

you were to pursue until your retirement in 1969. However, your involvement with teaching continued part-time for another 17 years.

On the occasion of your 92nd birthday, Neil and I have pleasure in making this

presentation on behalf of the Institute, in recognition of your services to amateur radio, the Wireless Institute, the WA Radio Industry and Education.

34 Luster Drive, Thornlie WA 6108

III

■ Antennas

All Band Vertical

Keith Rehe VK4KL * tells how he adapted a CB antenna for amateur use.

The Stationmaster CB antenna can be simply converted for use as a "Compromise All Band Antenna" with a simple modification.

Drill out the two top rivets that earth the bottom of the coil and isolate it from ground using an insulating block. Do not alter the length of the radiator. The antenna is shown in Fig 1.

Using RG58 coaxial cable, wind a 10 turn in-line RFC six inches in diameter and tape it to the support mast as close to the SO239 socket as possible. This isolates the coax and stops it acting as a radial. Another RFC of the same type can be used before the ATU, but was not required by VK3EL, VK4QP and VK4KL.

The mounting can be to suit your convenience. VK3EL used a clothes line but these do not always earth. VK4QP used the back stair rail. This was not

earthed either. Mine is mounted on a 12 inch metal pin which is a poor earth.

By experiment I found that the height above ground can help to resonate the antenna. The SWR on mine is flat on 30 metres and at the top of 10 metres. Further experiments gave best results with the antenna raised as high as possible and the mast earthed. An ATU was used to achieve a match for the transceiver. Lengthening the antenna to 26 feet did not help and it was left at its original length of 19 feet.

It has been very useful for some bands and is compact for small yards. The antenna will break down to lengths short enough to carry in a car boot for portable use. I have one with an ATU built into the bottom of the antenna for caravan or portable use.

These cast-aside CB antennas can be found in flea markets for \$25 to \$40.

Technical Editor's Note

The operation of many vertical antennas is dependent on reflection in the ground. Antenna efficiency can only be guaranteed if adequate provision has been made in the form of an earth mat, counterpoise or ground plane. Less than optimum results may result if attention is not given to the provision of an appropriate earth mat, counterpoise or ground plane.

The use of an ATU at the end of a length of relatively lossy coaxial cable may lead to excessive losses. A better technique is to match the antenna to the coaxial cable at the antenna feedpoint. This minimises the losses in the system.

*7 Guardsman Avenue, Alexandria Hills QLD 4161

ar

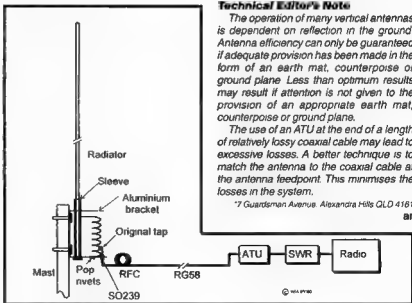


Figure 1 - All Band Vertical

1995 WIA Victorian Fox-Hunting Championships

Jack Bramham VK3WWW tells about the local championships for that interesting aspect of amateur radio known as "fox-hunting".*



Bruce VK3TJN on the hunt.

Photo by Geoff VK3VR

On Saturday, 29 April, six Melbourne fox-hunting teams gathered at the Yarra Glen Scout Hall in Yarra Glen, to contest the Victorian Fox-hunting championship for 1995/96.

With excellent weather forecast for the day, all teams were in high spirits. Foxes for the day were the 1994/95 champions, Jack VK3WWW, Chris VK3CKH, Bryan VK3YNG and Jack's brother Alex. Also helping were Arron VK3AJQ, Andrew VK3SWR and Simon VK3TUG.

Hunt one was a straight 2 metre fox hunt. This event was won by Bruce VK3TJN from the YQN team, hotly pursued by Geoff VK3VR and Greg VK3VT. Hunt two was on the 160 metre band. There was so much RF being produced for this hunt that one of the foxes received an RF burn from the dipole antenna. The amount of RF annoyed the hounds, with one complaining that they had run out of attenuation at least one kilometre from the fox. Eventually the fox was discovered by the VK3TVB team with the minor placings going to VK3VT and VK3YQN.

Hunt three was contested on 70 cm. Winning his first event at any state title was Phil VK3GMZ, followed by VK3VT and VK3DIP. Hunt four on 80 metres caused

problems for most teams. Only two teams, VK3VT and VK3TVB, managed to find this fox.

Hunt five was to be a two leg hunt. The first leg was in the 2 metre band and the second leg on the 10 metre band. By the time this hunt started, Bryan VK3YNG had decided to fix the problem of some teams

complaining the hunts were too short, by adding a second 2 metre sniffing leg. This was fine except that the hounds had to run about 1.5 km up hill and down dale to locate it. Because they were in unfamiliar territory, the best pick-up point was where they were dropped off. This meant running back the same way they had come. Bryan's tactics had paid off, for this really split up the teams, so much so, that one team found the 10 metre leg before any of the 2 metre transmitters. This wasn't a bad effort considering that the 10 metre fox wasn't transmitting!

An exhausted Geoff VK3VR from the VK3TVB team gave his team an enormous lead over the opposition by finding the 10 metre fox at least half an hour before the VK3VT and VK3DIP teams. All the teams then headed back to the Scout Hall for a BBQ tea and a well earned break.

Once tea was over, all the hounds gathered in the hall in preparation for the start of a four leg sniffer hunt. For this hunt all the mini foxes were located in the grounds of the Scout Hall. They were all transmitting on the same frequency but were timed so that they would transmit in sequence. Well, at least that was the idea. But, listening on my hand-held, it seemed that all four were transmitting at once!

Each mini fox was emitting a CW ident as well as quite lengthy messages. They were the brain child of Bryan VK3YNG and were the test versions of much larger remote-controlled versions to be used in RDF style fox hunts.

All the transmitters going at once didn't seem to bother Tony VK3JTT who quickly ran back into the hall with a correct list of letters taken from each mini fox.

By now two teams were emerging as potential champions, and both needed a



Jack VK3WWW hiding the "fox".

Photo by Geoff VK3VR



Trying to find the "fox" with "sniffers". L-R Greg VK3VT, Bruce VK3TJN and Bryan VK3YNG.

Photo by Geoff VK3VR

good result in the final event to take out the championship.

Hunt six was a four leg, three band fox hunt. The first leg consisted of a straight 2 metre fox hunt followed by a 10 metre fox hunt. Next came one of the most difficult bands to hunt on, 6 metres. This band has caused much frustration for a lot of hounds

in the past and today was no exception. The last leg was a 2 metre beacon located on the edge of an enormous blackberry bush which, for the first team in the area, posed quite a problem. I can still see Greg VK3VT attempting to walk across the top in the direction of the signal. After some considerable time, Ewen VK3NC located

the transmitter to take out the event from VK3TVB and VK3DIP

After a supper served by the foxes, teams gathered in the hall to hear the final results and receive a host of prizes kindly donated by Dick Smith Electronics.

Congratulations to Greg VK3VT, and his team of Ewen VK3NC, Phillip VK3JN, Doug VK3JDO and Lindsay (second harmonic VK3NC), who won the Victorian Fox-hunting champions 1995/1996 with a score of only five points lost. A close second was the VK3TVB team with seven points lost.

*46 Nurland Road, Vermont VIC 3133

BR

**Sign up a new
WIA member
today - we need
the numbers to
protect our
frequencies and
privileges**

Radio and Communications

incorporating **radio** and **QRP**

We've done it again. The March issue of **Radio and Communications** is jammed to bursting. As usual, it's brimful with articles we can all get something from.
How about some of these...

- Do your own HF propagation predictions. Chris, VK3CE checks out the IPS' ASAPs vers 2.4 for PC... great stuff!
- A Packet Radio Glossary. Do you really understand all that jargon? John Day, VK3ZIF, spells it all out in English.
- Build 'the Claw' antenna. Performance HF on a budget.
- Check out our three DX columns and other amateur radio special interest columns... all the best regulars every month!
- We finish off our beaut, simple regenerative receiver.
- An antenna for six... You bought a new HF box and found six metres inside it. Here's a new \$70 antenna to use with it.



Don't miss out — **RADIO and COMMUNICATIONS** is great reading for amateurs!
Check your local newsagent today!

■ Technical

Technical Abstracts

Gil Sones VK3AUI*

Connector Troubles

Three articles in the German amateur radio society magazine *CQ DL* have highlighted some dubious coaxial connectors. Michael Krochmal VK3KRO/VK3ZIP kindly supplied translations of the German text.

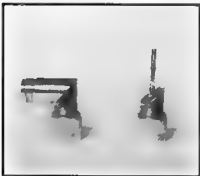


Photo 1 - N Type Connector

1. In *CQ DL* for November 1993, Heinrich Reckemeyer DJ9YW reports on an "N-Type Right-Angle Adaptor With Integral Attenuator Coil". Heinrich notes that the two internal central conductor pins which are arranged at 90 degrees to each other were connected by means of a helical metal spring. To make matters worse the spring made only poor electrical contact to each pin. The spring formed a wonderful attenuator with attenuation varying intermittently between 3 dB and 10 dB (see Photo 1).

2. In *CQ DL* for April 1994, Willmut Zschunke DL9ZO reports on a "UHF Right-Angle Adaptor With Integral Intermittent Contact" which caused his HF PA to become incandescent and also resulted in considerable intermodulation distortion in receive mode. Photo 2 shows the cause. Both of the internal components were able to be easily removed from the housing as they were only press-fitted into place. They should have been fitted with a screw thread. The connection between the two parts is merely a point-contact at the point where the spring which is attached to the male pin meets the cylindrical outside surface

of the female socket half. The contact resistance varied randomly between zero and open circuit and was probably accompanied by rectification effects which demodulated the incoming signal so that the receiver would not have to work so hard!

3. In *CQ DL* for June 95, DK1WC draws attention to 50 ohm and 75 ohm versions of BNC connectors. Apparently the 75 ohm versions have become common of late as a result of usage in video applications. Even though the differences between the two types are subtle, they are easily distinguishable. The 75 ohm types have a smaller diameter central pin. The 75 ohm types can be successfully used at HF and only incur attenuation of

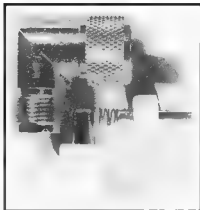


Photo 2 UHF Connector

the order of 0.1 dB in the 2 metre and 70 cm bands. However, one should steer away from the highly chromed types. The silver or nickel plated versions are much more reliable.

You should always be wary of connectors which have not come from a recognised manufacturer. There are also 75 ohm versions of N type connectors and you should not mix 75 and 50 ohm connectors in an installation.

Simple ACS Reception

There have been a number of decoder circuits featured in the local electronics magazines which enable reception of the Ancillary Communications Service (ACS) signals which ride piggyback on many local commercial FM radio stations. Damien Vale VK3CDI tells of a simple means to receive the ACS signals which he found in the August 1995 issue of *Popular Communications*.

The article outlined a simple way to receive Ancillary Communications Service transmissions employed by many FM broadcast stations. These transmissions are carried with the main FM signal and include services such as the BBC and other special purpose broadcasts. The main requirement is a communications receiver capable of receiving the VLF

range 67 to 92 kHz. I use a Kenwood TS-450 which tunes down to 30 kHz, although the specifications indicate a lower limit of 100 kHz.

Assemble the interface cable as shown in Fig 1 and connect between the FM receiver and antenna socket of the communications receiver. Tune to an FM broadcast station with the volume set to a comfortable listening level and then tune the communications receiver between 67 - 92 kHz to receive the ACS transmission, if any. Not all stations provide the service, but there are some interesting things to be heard.

The stations I have encountered transmit ACS on either 67 kHz or 92 kHz so an alternative tuning method is to set the communications receiver to either 67 or 92 kHz and then tune the FM receiver

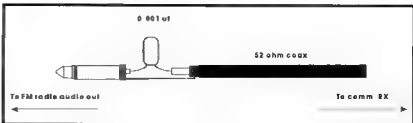


Figure 1 - ACS Interface Cable.

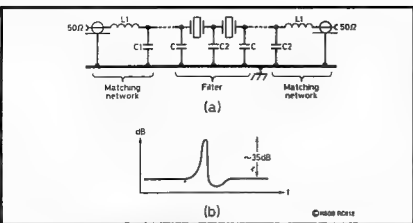


Figure 2 (a) Prototype two crystal ladder filter. (b) Passband shape of prototype.

across the band to see what you can find.

Note that, if you are using a transceiver in lieu of a communications receiver, you must ensure that you do not inadvertently transmit while the interface is connected!

The method relies on leakage of the sub-carrier signal through the audio stage of the FM receiver. If the receiver has significant attenuation to signals above the normal audio range you may not have as satisfactory results as Damien, but it is a very simple way to look for ACS signals.

Improved Stopband of Crystal Ladder Filters

The use of readily available cheap crystals in ladder filters has increased for

home construction projects. An interesting technique to improve the stopband attenuation appeared in Pat Hawker G3VA's *Technical Topics* column in *Rad Com* for December 1995. The idea originally came from Stein Torp LA7MI.

Stein built a filter using fifth overtone HC18/U type crystals at their fundamental frequency of 18.556 MHz. The crystals were marked with their fifth overtone frequency of 92.861 MHz. On their fundamental they were free of spurious responses and the filter and its response is shown in Fig 2. This is a prototype 2 crystal ladder filter which had a stopband attenuation of 35 dB.

To obtain a better filter the matching network was modified and arrangements

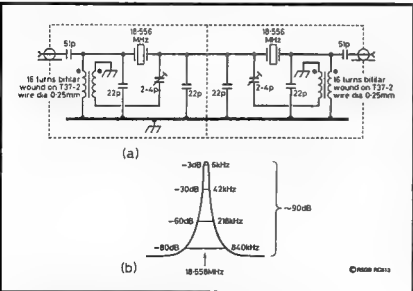


Figure 3 (a) LA7MI's improved two crystal 18.556 MHz filter. (b) Response of improved filter.

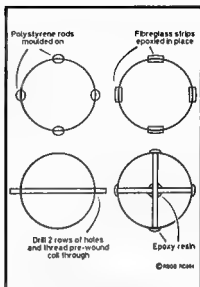


Figure 4 - Almost self supporting coil methods of support.

were made to neutralise the capacitance of the crystal. This was approximately 3.8 pF. The filter was carefully screened and the circuit and the improved response can be seen in Fig 3. The stopband is now close to 90 dB, which is quite an improvement. The inductors were wound on Amidon T37-2 toroids using 16 bifilar turns of 0.25 mm dia wire. The 51 pF capacitors are polystyrene. The passband is more symmetrical and the insertion loss is 1.5 dB.

High Q Coils

High Q coils are desirable to minimise losses. The dielectric of a former can produce losses which limit the Q. The airwound self-supporting coil is one way to minimise losses. A close approach to this airwound coil was the mininductor stock which used a minimum of supports.

There are a number of ways to minimise coil former losses and these were presented by Ian White G3SEK in his *In Practice* column in *Rad Com* for November 1995. These are shown in Fig 4.

One method, which mimics the mininductor, uses strips of fibreglass PC board stock epoxy-glued in place just like the supports of the mininductor airwound stock.

A variation of the PC board approach is to wind the coil around PC Board strips glued at right angles to each other. The turns of the coil are glued to the outer edges of the supporting PC boards.

Another technique uses a strip of plastic with two parallel rows of holes

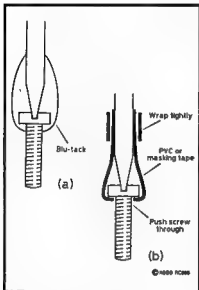


Figure 5 - Two ways to start screws in inaccessible places.

drilled to take the turns of the coil. The holes in each strip are offset by half the pitch of the coil. The coil is wound on a separate mandrel and is then wound into the holes in the plastic strip.

The plastic used should be low loss. If you are unsure about the plastic you can check it by placing a test strip in a microwave oven with a mug of water. By a series of tests of increasing duration you can soon see if the plastic test strip is lossy. Don't neglect the mug of water, though, as the oven needs some load. Similarly, creep up on the result and don't try to melt the test strip. The oven may never be the same if the test strip is heated too vigorously.

Starting Screws and Nuts

Also in *Rad Com* for November 1995, Ian White G3SEK gave some tips on starting screws and nuts in inaccessible places. Two techniques are shown in Fig 5.

The first uses Blu Tack which is the sticky stuff used to hold posters, etc on walls. A blob of Blu Tack on the screw head will hold it in contact with the screw driver and allow you to start the thread. Hopefully, the Blu Tack will come away on the screwdriver blade after you have started the screw.

The second method is to use some PVC tape or paper masking tape to hold the screw to the driver long enough to start the thread. The tape should come away with the driver.

*C/o PO Box 2175, Caulfield Junction VIC 3161

AT

■ Antennas

Random Radiators

with Ron Cook VK3AFW and Ron Fisher VK3OM*

A Simple and Effective Two Band ATU

Here is a circuit for an ATU, copied from an old journal some 30 years ago, which is simple and effective and covers both 80 and 40 metres.

Unfortunately, the original reference, possibly in a UK magazine, was not recorded at the time, so credit for the original idea is not possible here. We apologise for this.

The Circuit

The basic circuit is of a tuned circuit, comprising a coil and variable capacitor. This is shown in Fig 1. An inductive link coil is placed at one end of the coil and a switch added so as to place the antenna across the tuned circuit (parallel connection) or in series with the capacitor and inductor (series connection). The transmitter/receiver is connected to the link via the usual coax cable.

That's all there is to it. The deluxe version has one or more small light globes (pea

lamps) connected in series with the tuned circuit as a tuning aid instead of an SWR meter

Theory of Operation

Consider the suggested antenna in Fig 2. On 7 MHz the shorter feeder will present a high impedance at the shack end. If this is connected across the coil of a tuned circuit, any reactance can be tuned out by adjusting the tuning capacitor to resonate the whole system. The link coil then sees a resistance which, in this case, will be close to 50 ohms. For the longer feeder, the impedance at the shack end will be low. It can then be connected in series with the tuned circuit and any residual reactance tuned out. Again a low VSWR will be seen by the transceiver.

If the lamps are included, tune-up

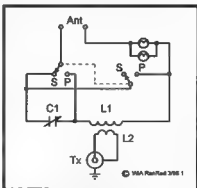


Figure 1 - Simple ATU.

C1 nominally 0-200 pF.

L1 26 turns #26 spaced one turn, wound on 32 mm (1 1/4") diameter former.

L2 4 turns #26 spaced 2 mm from end of L1, close wound on same former. (The original circuit had L2 internal to L1, but this is not always convenient.)

S = series position of the DPST switch.

P = parallel position of the DPST switch.

For All Your Requirements

AUTHORISED DEALER FOR:

KENWOOD

ICOM

Amateur ■ Commercial
Marine Communications



Shop 3, 443 Albany Highway,
Victoria Park, WA 6100.
Telephone (09) 470 1118
Facsimile (09) 472 3795

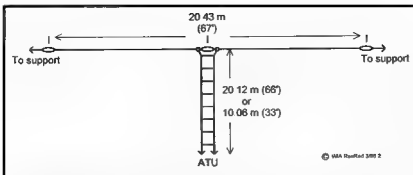


Figure 2 – 80 and 40 metre antenna.
I = Insulators. A 75 mm length of 20 mm electrician's plastic conduit can be used here.

If ladder line with significant dielectric between conductors is used for the feeders, then the length should be shortened according to the velocity factor of the line.

consists of tuning for the brightest glow. The lamps will need to be selected according to the power of the transmitter. Torch globes or dial lamps should be suitable. Instead of using two lamps in parallel, a shunt resistance could be used to limit the power in the lamp.

The antenna shown can also be used on 80 metres with this tuner as a tuning range of about 3 to 8 MHz can be obtained. I used this system in the late 1960s with an "invisible" version of the antenna shown. An attempt to use a different coil to operate on 20 metres did not succeed, however, it should be possible to use the same basic design to do so. Perhaps one of our readers might like to pursue modifications to achieve operation on other bands.

The Components

Virtually any former of plastic tubing, or even cardboard, can be used to wind the core on. The tuning capacitor will need to be air spaced except for QRP operation. Almost any variable capacitor used in broadcast band receivers could be used for 100 watt operation. I was fortunate in getting a single gang unit with nearly 1 mm spacing from a now defunct disposals store. Hamfests are still a good source for such items. High power capacitors can be purchased new from Daycom Communications P/L.

Antenna wire, insulators and balanced feeder can be purchased from Daycom and ATN Antennas. Other suppliers may also have the required components. Many readers will have all the parts in their "junk boxes" and so won't need to spend an extra dollar. If you do make this handy ATU up from your store of treasures, make the point to the XYL that you have found a good use for those parts hoarded for so long!

The series/parallel switch can be a slide or toggle switch rated at 240 VAC.

Construction

The ATU can be built in any convenient configuration, ranging from total enclosure in a metal box to an open arrangement on a wooden L-shaped frame. Keep the coil one diameter away from any metal sheet to maximise unloaded Q and circuit losses.

The coil could be made to plug into a

socket if multi-band operation were considered, although switching out part of the coil might also work.

As the capacitor rotor is "hot" when a balanced feeder is used it is necessary to mount the capacitor on insulators and use an insulated extension rod for connection to the tuning knob. A reduction drive is not necessary so long as a large knob is used.

The antenna can be made in inverted vee configuration, run as a s.o.p. or placed horizontally between two supports. It might be possible to use it fed off-centre if this is more convenient. Moving the feed point from the half length point to the one-third length point should not affect the operation and the ATU will probably match the system, although this has not been tried.

Conclusion

This is a handy unit for restricted budget operators, particularly those looking for operation on 80 and 40 metres with a backyard sized antenna. We look forward to hearing from constructors who have made successful modifications to this basic design.

*C/o PO Box 2175, Caulfield Junction, VIC 3161
 ar

WIA News

Australian military intruders on 7 MHz

Signals originating from Australian military services have been found intruding on the 7 MHz amateur band in recent months. WIA Intruder Watch Coordinator, Gordon Loveday VK4KAL, has advised WIA News that an Australian military forces beacon was logged on 7070 kHz at 2245 UTC, using A3H mode, last December.

A separate report, sourced from Darwin, said that the military has installed two radphones (radio telephones) in the Northern Territory, using 7070 kHz as one part of the circuit. One is located at the RAAF base in Darwin, the other at Tindal. It uses selective calling (selcall 0899 on the beacon) and telephone calls via the system have been logged.

The intrusion has been reported to the SMA.

In addition, an over-the-horizon radar system has been logged on 10,130 kHz and 18,050 kHz, with a 50 kHz-wide signal at 2252 and 1830 UTC respectively, and on 21,100 kHz at 0930 UTC.

This has also been reported to the SMA, but further log reports from radio amateurs would be welcomed.

Observation log reports, or requests for more information, should be sent to Gordon Loveday VK4KAL, Freepost Rubyvale 4702 Qld.

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of January 1996.

L30925	MR O G BARBER
L30927	MR W HOLIER
L50337	MR H W SCHEER
VK3AXT	MR D MEW
VK3EDW	MR J GILBERT
VK3LCM	MR C WILSON
VK3MLQ	MR D A WILLARD
VK3NDS	MR D SIMPSON
VK5NWD	MR W J DAY
VK5VD	MR R W HUGHES
VK52RA	MR A J ROSS
VK6BMT	MR M A THOMAS
VK7ZTT	MR A M LOHREY

In addition, we apologise for the omission of new member VK3BMD MR J HORSKY from the list of new members during 1995. VK3BMD joined during May 1995.

■ Book Review

Practical Transmitters for Novices

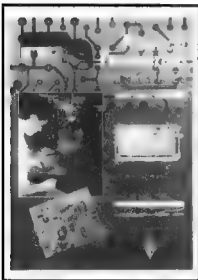
Publisher: Published by Radio Society of Great Britain 1995

Author: John Case GW4HWR

Reviewed by: Evan Jarman VK3ANI

Paperback, 245 mm by 183 mm, 132 pages

ISBN 1 872309 21 6



"The intent behind the book was to describe a number of 'easy to build' transmitters but it became obvious that some theory needed to be included." So says the author, but this is always the best way to describe a construction project: a balance of how and why. This applies to novice and expert.

A number of novice type projects are described with introductory chapters in each section giving some of the theory

behind the operation of the equipment involved.

The book tends to the UHF frequencies and above but some attention is given to the 160 and 80 m bands. The bands covered are 1.8, 3.5 and 50 MHz, plus 1.3 and 10 GHz. The title may be more applicable to British Novices as the frequency allocations in our two countries do not match. It could not be recommended as a practical book for Novices in Australia, although some chapters are recommended reading.

The book does appeal to a hobbyist tackling the world of UHF or higher for a first or second time, particularly 1.3 GHz. There is a good variety of test and transmission equipment to build, most of it fairly simple.

Also included are chapters on construction techniques and the obligatory chapter on looking after your tools. The author appears to have kept it simple, although some projects would require more than the odd weekend to build. The drafting is the usual Derek Cole standard making the diagrams very easy to understand with no ambiguity. Some of the projects come from the RSGB magazine *Radio Communications*.

For the VHF/UHF dabbler, this book is worth looking at; for the Australian Novice there are better books.

The review copy was supplied direct from the RSGB.

**Have you advised the
WIA Federal Office
of your new call sign?
Use the form on the reverse of the
Amateur Radio address flysheet.**

ICOM

Count on us!



"VK3LZ calling!"

More sound information from your friends at Icom

AN OUTSTANDING ANTENNA

I have had the pleasure of extensively using the Terlin Outbacker "Perth" recently with the IC-706.

If you are looking for a suitable antenna, I can thoroughly recommend it.

AMAZING VERSATILITY WITH IC-706 ACCESSORIES

The separation cable for the IC-706 can now be bought in two versions.

The OPC-581 is 3M in length and the OPC-587 is 5M

The latter was planned, then shelved and is now available. Don't forget the swivel mounting base for the separated front panel, MB65, is now available.

SON OF IC-2700H

The IC-2700H has gone out of production. If you're interested in 2M/70cm mobiles, the IC-2710H update model, again with detachable front panel, will be available in late March.

"...73"

Call me at Icom on
free call 1800 338 915
ph: (03) 9529 7582
fax: (03) 9529 8485

ACN 006 092 575

■ History

HF DF

Lee Hitchins VK6HC reminisces about an interesting piece of wartime equipment, fondly known as "Huff Duff".

The recent excellent series of articles in *Amateur Radio* on the development of the Kingsley AR7 receiver prompts me to write a brief article on another great piece of wartime equipment, namely the Adcock High Frequency Cathode Ray Direction Finder.

Designed and built by AWA, it was used throughout Australia and New Guinea during World War 2 and for some years afterwards. Its primary use was to assist in air navigation but it was also very much in use for Japanese "intercepts" where not only were stations identified and copied, but positions noted as well. A further use was for long range weather forecasting by means of all stations simultaneously noting lightning flashes, and their approximate intensity and direction, thereby indicating approaching fronts.

The equipment consisted of twin high frequency receivers of precisely equal gain, each being fed by two of four vertical antennas accurately positioned at North, South, East and West. Both receivers had an antenna, two RF stages and a mixer, with an oscillator common to both and providing the master tuning control. After detection the separate IFs were then fed to the North-South (vertical) and East-West (horizontal) plates of a 5BP1 cathode ray tube which was surrounded by a rotatable compass rose. Precise tuning and equality of gain was achieved by tuning each of the antenna, RF and mixer stages, and with the IF stages all being provided with individual gain controls. An external low powered oscillator was located at 045



The author operating an Adcock High Frequency Cathode Ray Direction Finder in 1942.

degrees to provide visual alignment and a known test bearing.

The frequency range was approximately from 2.5 to 8.5 MHz and major changes were made by changing large pairs of plug-in coils. A complete frequency change and re-alignment could be achieved in one minute. Once aligned, an incoming signal was displayed as a straight line across the screen and the compass rose swung to obtain the bearing and reciprocal. Sense was determined by switching out one antenna and noting any change of quadrant.

An experienced operator could obtain a bearing on either a

"dot" of CW or a static flash due to the screen persistence. All of which refers to ideal conditions always determined by ionospheric conditions, time of day or night, and weather. Bearings were always given as first, second or third class depending on perceived accuracy depending on the strength and stability of the signal.

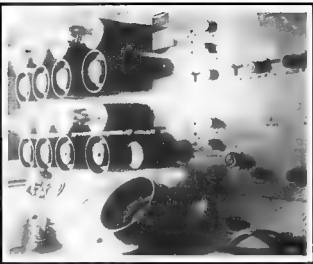
The very first time that I operated the gear "solo" I was asked for an urgent bearing from a very worried "rookie" pilot. Instead of a nice definite straight line on the screen I was confronted by an oval that vaguely drifted on the screen. Taking a hurried mean on this, I gave "a course to steer" and was later visited by the pilot who thanked me profusely for getting him home. Later on I realised how lucky we both had been and was certainly taught to be cautious.

Strict procedures existed in that bearings were only given provided that the pilot responded correctly to the code of the day. Not always so easy for pilots who had other things on their minds. I was once hailed over the coals for giving a bearing to a pilot who had not responded correctly. "How did you know that it was not an enemy?" I was asked. "Sir, when after several challenges the pilot radioed "fors sake give me aing bearing" I assumed he was Australian".

The DF hut was always in an isolated area which was as clear as possible from anything which may have compromised the accuracy of bearings and calibration procedures. Photos of the equipment show the pairs of plug-in coils on the left. To the right are the IFs with their switches and gain controls. In the centre is the large main tuning control with the cathode ray tube and compass rose below. The sloping front panel also contained the audio and filament controls.



The DF hut and the four vertical antennas accurately positioned at North, South, East and West.



The Adcock High Frequency Cathode Ray Direction Finder.

Most communications, provided by remote transmitters, were on CW with phone for closer approaching aircraft. Watches were always on a 24 hour basis with only three operators, one on duty, one sleeping and one hopefully on leave. It tended to be a somewhat lonely business as one had relatively little personal contact with fellow operators or even other signals people.

Still, a most interesting business with not only aircraft operating but also close co-operation with Aeradio, the flying doctor and often naval operations as well. The ubiquitous AR7 was usually on standby for distress and other frequencies. Spare time activities included calibration checking, "intercepts" and the retransmission of the received "kana" code on landline.

The latter activity at least had its more interesting and personal side since the retransmission to HQ was generally via country telephone exchanges at night. Have you ever heard the stonies young ladies exchange during the silent watches of the night?!

*23 Robins Road, Katamunda WA 6076

■ Antennas

How to ... Load up a Tree or Confuse your Contact

Steve Bushell VK3HK presents what seems to be a plausible account of his experiment. We hope to hear more in due course.*

Last Sunday I decided to prove, one way or the other, if what I had heard some time ago about activities undertaken by the American armed forces, were indeed possible.

Some one had told me that trees were being used as antennas.

As the odd eucalypt is often what I use to support a not-too-efficient portable aerial, I decided, after a lot of soul searching, to give it a go. That did not detract for one minute from my sense of inadequacy and I have to admit feeling like a real mug setting up my HF gear on an outdoor table in the back yard with the view to using a 14 metre high blue gum as a sky hook!

I started proceedings by driving an earth stake several feet into the soil immediately below the tree in order to obtain a counter connection point for my 300 ohm balanced transmission line. The other side of this line was attached via an alligator clip to a screw driver hammered into the trunk about one metre above ground.

In between the feed line and my transceiver was an ATU with which I hoped I would possibly be able to obtain some degree of matching, if in fact this rumour had any credence at all.

I started on 21.3 MHz by dropping a carrier for tuning purposes and, surprisingly, I found no trouble at all in easily taming the impedances. As a matter of fact, the tuning point for the tree was remarkably close to the settings I use for my 40 metre dipole.

OK, I thought. So it takes power reasonably well. But so too does a dummy load!

However, on the other hand, "Perhaps the Yanks got it right this time". As it happened, though, I was destined not to find out on this band. It was as dead as a dodo bird.

Not wanting to be too pretentious, I decided to give the 14 MHz band a miss and dropped down to 7 MHz where there is usually good activity. A quick tune up and

then a snoop around the band revealed many stations both local and interstate and at very good signal strengths.

Many contacts ensued with stations as far afield as Perth, and Cairns with my average signal report being R5 S8. You can imagine the response from these stations when informed of the aerial in use and, more often than not, the other operator was still none the wiser at sign off as to what antenna "I had in the tree".

I was also able to hear stations from South America and Southern Europe but, as there appeared to be a contest on, I decided against calling them.

For those intrepid experimenters amongst my readers I will mention a few points of interest in order that you may obtain a degree of expertise in the art of tree feeding.

a. Useful signals were achieved with the matching impedance varying in the range 50 ohms through 600 ohms. After this, performance deteriorated such that a piece of wet string would most likely have served more purpose.

b. Adjusting the feed point on the trunk to a height about 0.125 of a wavelength above ground provided optimum signal, both transmitted and received.

c. A good ground connection was found to be essential.

d. I expect that a balun would prove effective in conjunction with a coax feed.

e. It is my summation that, as good local signals were achieved with an Australian Blue Gum, DX should be practical with the use of such trees as Canadian Spruce, Baltic Pine, Californian Redwood and English Elm.

*20 Allendale Crescent, Mulgrave VIC 3170

■ Amateur Radio Events

The South East Radio Group (SERG) Annual Convention

A Technical Review and User's Guide

*Based on personal experience by Alex Edmonds VK3BQN**

Specifications

Frequency	:	One cycle per year
Duration	:	Two Days (Saturday and Sunday)
Timing	:	Queen's Birthday weekend
Location	:	Showgrounds Hall, Mt Gambier South Australia
Cost	:	Extremely variable. Membership can be chosen for one or both days, including meals on the Sunday, but the major costs will be: (a) accommodation, varying from tolerable to luxurious depending upon what you are willing to spend; and (b) the amount of money spent on equipment.
Accommodation	:	There are often several different events taking place in Mt Gambier on this weekend. As a result, some hotels are booked out months in advance (one team several years ago arrived extremely late at night due to car trouble, and spent the weekend camping in the motel laundry). Lists of motel ratings were available from SERG at one stage, but they were based solely on how good a radio location each provided, rather than motel quality.
Terrain	:	One extinct volcano with three lakes in the craters, hilly ground, pine forest plantations and (if you go in the fox-hunts) "roads" that would have to be significantly improved in order to be classed as goat tracks.
Age of Basic Design:	:	30 years.
Schematics	:	List of events supplied in advance by SERG, or on registration at the hall
Operating climate	:	Usually cold. Usually raining. Sometimes foggy. Sometimes all three at once. 1994 actually had some sunshine. This may be regarded as possible proof of the theory of global warming.

Basic Explanation

1. South East of where?

The organisation that runs the event is situated in the South East of South Australia.

2. Purpose?

An amateur radio convention to view trade displays, buy and sell new and secondhand equipment, meet other amateurs, and compete in fox-hunting (no "Scrambles" were run in 1994 due to the fact that in previous years the results have tended to be something like a five way tie between the five teams competing)

Comment

If you are planning to travel across from Melbourne, it is recommended that you do

so on the Friday night, in order to give your team time to recover from the long drive.

Report on the 1994 Model

This event once again attracted large numbers of VK3s, including a large infestation of "NERGs". These are the "North East Radio Group", from the North East of Melbourne, Victoria, and perhaps better described as the "Let's go to Mt Gambier, win all the contests, and annoy the South Australians Radio Club". They are identified by their dark blue windcheaters marked "NERG" with what appears to be a large fuzzy thing of some type, and their maling call of "where's the bloody fox" or some variation.

There is also a small but exclusive group noted for their white windcheaters with

"NUKE THE NERG'S" and a small fuzzy thing hanging upside down.

This has started something of a trend and a number of serious hunting teams now have their own identifying uniforms

Trade Displays Were Run By:

Dick Smith Electronics
Stewart Electronics (Daycom)
ICOM in association with Jensen Communications
Kenwood
The SA Division of the WIA components sales service

Anybody trying to flog something they thought they could get rid of.

If you do plan to go fox-hunting, grab whatever time you can to look at the displays during the day. By the time you return from the third or second last hunt, most of them will be shutting up. (If you go on the last hunt, they'll all have closed by the time you get back to the hall.)

A Word of Caution for Beginning Fox-hunters

The standard of some of the teams competing in the fox-hunts is VERY high. Consequently, the hunts tend to be:-

- a) long,
- b) difficult, or
- c) long and difficult

The vehicle of choice for fox-hunting is, if possible, a four-wheel drive. Always carry a communications radio to call for help when you get bogged. Carry a tow rope for when you (or other people) get bogged.

The SERG uses a system of "drawing tickets" for starting position in the fox hunts, in order to avoid the mass rush for the gates that used to occur.

Pine plantations play absolute hell with radio signals. When you get completely lost (and you will), call the showgrounds hall for help. With any luck, somebody there will be listening and should know what's going on.

What do you do if you're starting out on a hunt and can't hear anything?

Follow somebody. The trick is in knowing WHO to follow. (DO NOT, repeat DO NOT follow us!)

Note that, while this is accepted practice in getting to a point where you can hear the signal, it is regarded as being "bad form" to simply follow someone for the entire hunt and hope they'll find it for you. Nor does the hunt always go to those with the best equipment, drivers and navigators.

One team has been known to take out second place in competitions using a 1960s vintage Short Wave transistor radio, with a fence rod inside it, held up in the back seat.

Hunting includes HF, VHF and UHF events. As a result different types of antenna and equipment are required for different hunts.

Six metres is difficult because the frequency is too high for a good DF loop.

and too low for most other types (it has to fit on a car, remember?)

Doppler shift systems are popular for two metres, but would obviously be impossible to use for anything lower in frequency. Most people go for the simplicity of a beam, but some teams have automatic rotators (geared down from old electric motor-mower engines) and four element quad antennas (with, in one case, a CRO display of a card-oid pattern to indicate bearing).

DF loops (10 m, 6 m) are difficult to work with. Ferrite rod antennas (80 m, 10 m) are small and inefficient.

Over complexity can also lead to problems. One team had the slight problem that on the 80 metre hunt the engine ignition system produced such a powerful signal that they had to switch off the engine to take a bearing.

This is not a good system.

Rules the Fox Must Obey

1. Rule somewhere and put out some amount of signal sometime until found and sufficient time has elapsed for the hunt to end. For example, talk as much or as little as you like. Transmit carrier if and when you feel like it. Lie to people about your location and what you can see, whenever it feels right. Change transmitters and power levels. Move around before and after people have found you if it seems like fun.
2. Rule 1 is not binding.

Rules the Hounds Must Obey

1. Obey the road laws.
2. Obey specified local fox-hunt rules. (For example, only one sniffer per car may be a rule specified).
3. Expect to spend a lot of time, a lot of effort, a lot of petrol money, and get really, really lost.
4. Be at least slightly mad (optional but recommended).
5. Do not trust the other hunters. Some will give honest directions, but some will take great delight in mis-directing you. This is recognised as a fact by all experienced hunters.

Other Events

There is also a home-building competition which is apparently being encouraged to some extent by some anonymous "donor", although if he was there in 1993 I'm sure he was cheated off. That was the year I entered the home-built competition simply because so few other people had. I won a prize, basically for entering.

In 1994, however, they ran a competition for different grades of home builder, and the number of entries was much higher than in the last few years, ranging from 10 GHz transceiver equipment to complex fox-hunting and sniffer equipment, and replicas of early valve broadcast receivers.

The quality of all the entries appeared to be very good, and most people had provided circuit diagrams and explanatory details that were very helpful in understanding the equipment.

The Fox-hunting

Having arrived in Mt Gambier on the Friday evening, we had time for seeing some of the town in the morning. It also, of course, gave us plenty of time to check out our equipment, which, of course, we totally failed to do.

We therefore followed the long standing tradition of discovering one hour before the first event (two metre fox-hunt, 146,000 MHz, 1430 local time) that I had, with my customary foresight, left behind two vital pieces of the roof mounting system that was supposed to hold the beam. This led to a rapid search of the "city" which was, for the most part, closed, in order to find a new set of brackets.

Failing in this, we bought a cheap set of "sku bars" at K-mart and rushed back to the hall to begin the attempted high speed modification of the mountings.

We, of course, lost track of time and while making the changes to the mounting, we observed the rest of those involved driving off to start the hunt from the other side of the hall.

We therefore sent a message to the organisers that we intended to start as soon as we had finished the changes.

The delays because of my errors didn't matter greatly in the end, because when we said we were going to try hunting, we didn't get the message that the frequency being used for the hunt was not actually that listed on the program and consequently we never heard the damn thing at all!

Believing that, from this start, things could only get better, we drew a number and lined up for the start of event two, (70 cm fox-hunt, 439,000 MHz, 1520 local time)

This time we got to a position quite near the fox before he shut down, but well behind the leaders.

The main point of interest in this hunt was which of the navigators in the various cars was correct. That is, was the fox "a good 500 metres inside South Australia" as he claims, or was he actually over the border in Victoria as claimed by most of the teams hunting? (not that there's anything in the rules against it, but it was a very long way from Mt Gambier either way).

Event three was the multi-stage night fox hunt, beginning at 1600 local time. We did not at any stage really consider entering this event for one simple reason. It is, and always has been, a complete Bastard! (Type of language made for fox hunting! Ed)

This time it involved four stages, one stage each on two metres, 70 cm, 10 metres and six metres. The order and frequency of

these stages is not given out in advance. Consequently, anybody who wishes to enter seriously requires a system that allows rapid changeover of equipment.

Which does not change the fact that, typically, it lasts for well over four hours, more than 200 kilometres and has, at least once, been won by a team that had to stop and change a flat tyre during one of the stages. The second place team in 1994 year did 205 km, and finished around 2330 or 2345 hrs. This is NOT a hunt for beginners.

This finished the events for the Saturday. Sunday began at 0930 with a sniffer hunt on 144.000 MHz. This is made more difficult than it sounds by a small timing circuit attached to the transmitter so that it puts out a half second pulse of signal roughly every 20 seconds. Personally, I never heard it. I'm not entirely sure I believe it was switched on, despite the fact that somebody else found it!

This was followed by a three stage two metre transmitter hunt, with a choice of two different frequencies on the final leg.

We found (eventually) the first two stages, but did not hear any signal from the third. All else failing, we headed back to the mountain to get some height and hope for a signal. We also changed to the other frequency to see if we could hear that transmitter.

It was later explained to us that this had possibly been a tactical error, since the "alternative" transmitter we were looking for had, upon switch on, produced large quantities of smoke, burning smells, and no signal whatsoever.

This was followed by lunch. After lunch, another sniffer hunt (about which the less said the better). This was followed by a six metre fox hunt on which we heard the signal, but could get no bearing, and thus spent our time circling 15 km from the transmitter, and an 80 metre fox hunt on which we never heard the fox at all.

Event nine was another two metre fox hunt, in which we got to within approximately one kilometre of the fox before several other people, but had to give up, go back and take the long way round due to the path ahead of us being totally unsuitable for anything not fitted with four-wheel drive (as proven by one of the teams behind us, who did go along it and managed to hit the ground with the bottom of the car several times).

Going the long way around we got there.

Last BUT WE GOT THERE.

We did not attempt the 1296 MHz hunt (although I can tell you that, traditionally, it is either night at the bottom of the crater, or night at the top of one of the lookouts).

(Mysteriously, the account by Alex ceases at this point. Could it be that he found further fox-hunting memories too painful? Ed)

*PO Box 445, Blackburn VIC 3130

■ ANTENNAS

Some Useful Wire Antennas for HF

Part 1

Rob S Gurr VK5RG shares his comprehensive knowledge of wire antennas with us.*

When a new amateur operator makes his first enquiries to those already on the air, seeking advice on the best antenna to erect, he is frequently greeted with a short answer, which is actually an amateur call sign. "The G5RV" will be the response from some, the "G8PO" from others, and perhaps even the "ZL Special" from a few. Others may recommend a "W8JK", a "HB9CV", or a These names mean very little to a beginner who is looking to establish his own station. What do these and other similar titles mean, and what benefits does he get by using such an antenna? Why are there so many choices, and why can't he go straight to the best type, fully confident that it will work first try? In this article I will discuss the above antennas, and also describe some other very useful HF wire antennas which, as yet, have not been given a title that identifies a person, rather than a physical item. Firstly, though, a few general matters about antennas.

Some Wire Antenna Considerations

The Wire

A 100 metre reel of 2.5 mm² stranded copper earth wire with PVC insulation costs about \$35.00 from electrical trade outlets. Don't buy it by the metre at retail hardware shops or you may pay up to three times this price. One hundred metres may last a long while; however, a friend may share the cost with you. In most cases, by the time an

antenna and feedline are constructed, there will be little surplus. Also available is electric fence wire, from farming supply outlets; a sample reveals this to be multi-stranded steel wire, with one conductor of copper.

Connectors

Soldering wire joints outdoors is not always practical. The use of commercial brass earth connectors, such as Clipsal Type 563/2, or similar, is recommended. These may be covered over with insulation tape or, additionally, silicone rubber, if improved weatherproofing is required. The soldered joint is to be preferred; however, it should be a mechanically suitable joint, with wires twisted a number of times, or clamped, before solder is applied. I have had satisfactory experience with the "Post Office", or "Lineman's Joint", and find them quite suitable for copper wire aerial connections (see Figs 1 & 2).

Masts

Steel tubes, sectionalised masts, wooden or bamboo poles are all suitable. The use of trees, house fascias, and other elevated supports is also possible, providing suitable anchoring techniques are used. "U" bolts, turnbuckles, etc, are a standard hardware shop line. Height above ground will generally legally be restricted to 10 metres. However, if you are willing to obtain the necessary permit, heights up to 15 metres may be used in a number of suburban installations. There is, unfortunately, a significant disadvantage in using this additional height on some frequencies. With trees, due to wind sway, use of halyards and pulleys utilising springs and counterweights is recommended. Wet foliage under certain circumstances may be a problem.

Guy Wires

Stranded steel galvanised wire may be used, and often surplus stainless steel rope is available. Joints can be made using clamps, turn-buckles and thimbles, as well as the above-mentioned Post Office splice

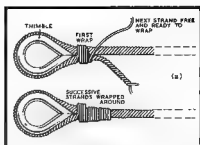


Figure 2 - The "Post Office" splice for securing stranded wire around a thimble or insulation.
(Reprinted from the *RSGB Radio Communication Handbook*, fifth edition, page 12.91)

(see Fig 2) method. It is good practice to use insulators liberally (about every 3 metres), however, if a one-length guy wire is preferred, an insulator at the top and bottom is essential. This requirement is to ensure that the length of wire associated with any unbonded metal-to-metal contact (thimble through the eye of a turnbuckle) is as short as possible. This prevents large signal pickup and subsequent re-radiation should corrosion at the junction occur. We are all familiar with unexplained "crackles" on our receivers, and also with cross-modulation involving broadcast stations, which mysteriously worsens on dry windy days!

Should it be necessary to have a long length of guy wire, or a cable catenary system that cannot be broken up with insulators, all metal to metal flexible contacts should be bonded over, or liberally coated with a graphite (conducting) grease; EMF Welder Grease, by Golden Fleece, has been my favourite, but other brands are available. It is not necessary to break guy wires into short sections using insulators. If you are inclined to do so, break them at quarter wavelengths on the highest frequency in use, ie every 2.5 metres for 28 MHz.

Transmission Lines and Spreaders

The construction of a suitable open wire line can be simplified by the use of 16 mm, or 20 mm, heavy duty electrical conduit.

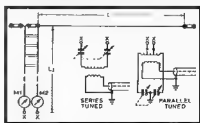


Figure 3 - End Fed Zepp.
(Reprinted from the *RSGB Radio Communication Handbook*, fifth edition, page 12.61)

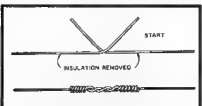


Figure 1 - Splicing antenna wire.
(Reprinted from *The ARRL Antenna Book* 15th Edition, page 21-3)

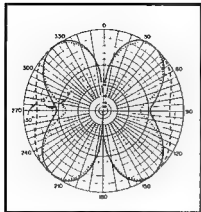


Figure 4 - Horizontal pattern of radiation from a full-wave antenna.
(Reprinted from *The ARRL Handbook*, 1988 Edition, page 17-8)

Doubts may be held by some readers about the suitability of plastic as an insulator for feedlines in this manner, but I don't think a contact has ever been lost due to such small losses. Another insulator material, already protected for UV radiation, is the popular black garden automatic water sprinkler hose, about 4 mm diameter.

Feedlines should be drawn away from antenna arrays at right angles, particularly where close to towers and other metallic supports. The use of UPVC to ensure minimum deterioration due to ultraviolet radiation is not considered necessary. Holes in the conduit to allow the wire to pass through, and a smaller diameter tie wire to prevent the spacer slipping down the feedline are required.

Textbooks and practical experience vary. A line constructed for 300 to 800 ohms would be suitable in most cases, eg the 300 ohm open wire TV ladder line is satisfactory; however, do not use any other type of 300 ohm commercial feed line. A home-made line, of spacing between 50 and 150 mm is recommended, with

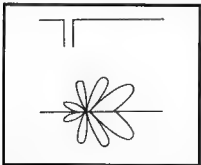


Figure 5 - Radiation pattern of a long wire antenna fed from a low impedance point near one end.
(Reprinted from *The Radio Handbook*, twenty-first edition, page 28-3)

spacers installed every 300 mm for narrow spaced lines and every one metre for wide spaced lines.

Lines could be pulled tight, but a loose hanging line with no right angle bends is acceptable. Wind sway may be a minor problem unless the lines are running close to earthed metal surfaces such as roofs, towers, etc. I would inject a word of warning here. Do not treat a tiled roof as an unearthed surface. Usually below the tiles you will find hot and cold water, and gas pipes, electrical wiring, TV antennas and associated cables, telephone wires, etc, all of which have an influence on any nearby aenals or feedlines. The entry of the feedline (2×2.5 mm² insulated copper stranded wire) to the radio room is best via feed-through insulators; there are many variants available, most of which suggest themselves.

Do not run through a metal frame window and close the window on the line. The window may be at a quarter wave point and the high voltage will burn the insulation through, and so on. Brickwork entry is possible using small diameter glass tubes in mortar courses, etc.

Be certain to maintain the same spacing between the conductors for the full length of the line to the ATU. A good test of a feedline is to listen on it, through the ATU, when the aenal is disconnected. If you hear nothing, then it is balanced.

It is good practice to have an integral number of quarter waves in a feedline, however, random lengths do not inhibit good results, they only make the ATU work into complex reactive loads.

In some cases a number of ATUs, tuned for separate bands, may be remotely located and fed from the transmitter through coaxial cable.

Element Spreaders

Spreaders for separating the elements can also be made from electrical conduit, with a wooden dowel, or fibreglass rod, inserted internally to give rigidity. The conduit lengths available are regrettably a maximum of four metres. Some ingenuity may be required to make simple spreaders longer than this. Aluminium tube, 25 mm in diameter, may be suitable for up to five or six metres and, as it is usually at right angles to the antenna wires, should have little effect on radiation. Short aluminium tube lengths may also be used for joining wooden dowels, prior to enclosure in PVC conduit. Conduit end caps (Clipsal 252 series) are recommended, to finally enclose the spreader.

Fibre glass rods may also be fabricated to form elongated "cages" for spreaders up to five metres long.

Coupling Units

Most of the antennas to be described are

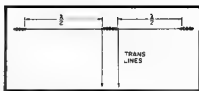


Figure 6 - A two-element collinear array (two half waves in phase).
(Reprinted from *The ARRL Antenna Book* 15th Edition, page 8-32)

balanced and symmetrical. The feedlines are not always "flat" (SWR terminology) and the impedances presented at the amateur equipment may vary from less than 20 to over 1000 ohms. Most multipurpose ATUs ("Z" Match, "T" match with balun) may be adjusted, with the assistance of a suitable SWR meter, to convert these impedances to 50 ohms to interface with standard amateur equipment. The description of a suitable ATU is included at the end of this article.

Earthing Systems

It is desirable for all aerial installations to have a good RF earth, and when using ended wire antennas (verticals or horizontal), it is essential. There are many practical reasons for this, and if one very good earth point can be established immediately adjacent to the ATU, and all other equipment bonded back to this point, it should be sufficient for most applications. The earth lead should be as short as possible as the ATU is part of the antenna system. All bonding earths to equipment are ancillary to this main lead.

(It should be remembered that the amateur equipment itself should be separately earthed through the three wire power cable, The General Purpose Outlet, and the whole electrical system, all complying to the requirements of the SAA Wiring Rules AS3000)

A suitable earth stake may be a two metre length of 20 mm water pipe driven

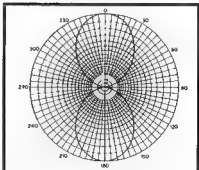


Figure 7 - Free-space E-plane directive diagram for a two-element collinear array.
(Reprinted from *The ARRL Antenna Book* 15th Edition, page 8-32)

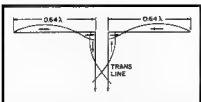


Figure 8 — The extended double Zepp. This system gives somewhat more gain than two half-wave collinear elements.

(Reprinted from *The ARRL Antenna Book 15th Edition*, page 8-34)

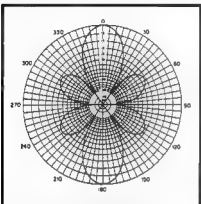


Figure 8a — E-plane pattern for the extended double Zepp.

(Reprinted from *The ARRL Antenna Book 15th Edition*, page 8-34)

into the ground, with a standard electrical earth clamp for connection of the wire. In the case of end-fed wires, or ground planes, all nearby exposed metal such as carport supports, roof decking, galvanised fences, domestic water pipes, should be bonded back to the earth stake. A suitable wire is 6 mm² insulated earth wire (Green/Yellow) from an electrical trade outlet. Remember,

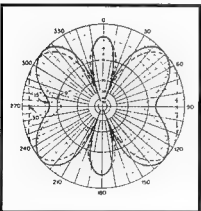


Figure 9 — Horizontal patterns of radiation from an antenna three half-waves long.

(Reprinted from *The ARRL Handbook*, 1988 Edition, page 17-8)

the longer the earth lead, the higher the ATU is above radio frequency ground. The reason you get "bites" from microphone cases and equipment is that these items are often a quarter wave above ground where a high RF voltage exists.

Never rely on the mains earth as it may be a long way to the main switchboard, and even longer to the main earth stake. These aspects are most important in the end-fed antenna situation. In a practical situation, most amateurs should be able to achieve an earth wire of no more than a metre in length. Do not place your ATU at the top of everything else, or you may easily encounter that undesirable quarter-wave

End Fed "Zeppelin"

A halfwave dipole, fed at one end with a non-radiating feedline, exhibits bi-directional radiation properties near its resonant frequency and on lower frequencies only (see Fig 3). At higher frequencies, major and minor lobes appear and its use on harmonics for multiband operation provides useful gain, particularly when considering harmonics above the fourth or fifth (see Fig 4).

One such aerial is usually known as the end-fed "Zepp". Actually, the figure eight pattern of the dipole radiation, and symmetry of the lobes on harmonics, is somewhat distorted, to give a directional radiation away from the feeder end (Fig 5). These aspects are worthy of further reading; however, for a "backyard" installation, its application is somewhat limited if directivity is required. The above aspects do not preclude the end-fed dipole being used as the driven element of a collinear phased array. In fact, some physical layouts may require such a feed (sometimes the line of support poles may be at right angles to that necessary for the use of an alternative directional array). Such

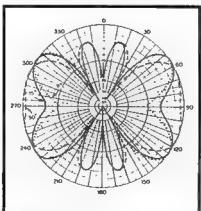


Figure 10 — Horizontal patterns of radiation from an antenna two wavelengths long.

(Reprinted from *The ARRL Handbook*, 1988 Edition, page 17-8)

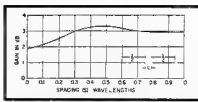


Figure 11 — Gain of two collinear half-wavelength elements as a function of spacing between the adjacent ends.

(Reprinted from *The ARRL Antenna Book 15th Edition*, page 8-32)

arrays stay bi-directional, in a direction at right angles to the line of their support masts.

Centre Fed "Zepp"

An array of two in-line (collinear) half-wave elements (Fig 6), fed in the centre with a tuned feeder, exhibits a gain of 1.8 dBd (4 dBi) (see Fig 7). This is known generally as two half waves in phase. By extending the dipole lengths to 5/8 wave, the array becomes two extended half-waves in phase (Double Extended Zepp), with a gain of 3 dBd (5.2 dBi) (see Fig 8). Such an antenna, usually with end feed, is well known to 144 MHz operators as a "Ringo".

When such an array is erected and tuned for 14 MHz, it is coincidentally two half waves in phase on 10.1 MHz. On 7 and 3.5 MHz the array is effectively a long dipole, and a short dipole respectively, but with still the same bi-directional radiation. We now have a bi-directional array for 3.5 to 14 MHz, with a useful gain on both 10 and 14 MHz. On higher bands the bi-directional lobes are replaced by multiple lobes (Fig 9), at various angles, however the main lobes continue to exhibit even higher gain. Regrettably, they may not be in the direction that you may wish to frequently contact (Fig 10).

Specific dimension for this is simply calculated by assuming a design frequency of 10.1 MHz, where a half wavelength is 14.85 Metres. This gives a somewhat improved DX performance on the G5RV (mentioned later), where bidirectional properties occur on the 3.5 and 7 MHz bands only, and multi-directional lobes become evident on 10.1 MHz.

As an ATU is necessary to get multi-band operation from this antenna and a G5RV, this shorter antenna has more to offer.

Maximum gain possible in any combination of two dipoles is 3 dBd, ie two arrays with unity power can only produce twice power under any condition. This is an important fundamental in understanding antenna gain (Fig 11).

Part 2 of Some Useful Wire Antennas for HF will appear in next month's issue of *Amateur Radio*.

*35 Grandnew Avenue, Urmah SA 5054

■ People

International Travel Host Exchange

Ash Nallawalla VK3CIT*, Federal Coordinator, ITHE

It has been eight years since an in-depth article about the International Travel Host Exchange (ITHE) scheme was published (*Amateur Radio*, May 1987, p3), so here is an update.

ITHE is a free program administered by the American Radio Relay League (ARRL) since 1984. Its aims are to foster international goodwill and friendship between radio amateurs who are lucky enough to travel to another country or another part of their own country. A master list of participants is maintained by the ARRL and co-ordinators in sister societies, such as the WIA, help to keep the list up to date.

Participants are interested radio amateurs who wish to meet or host fellow operators from near and afar. Your name does not have to be on the list for you to take advantage of such hospitality, and you can do so when travelling around our own country. Once you are on the list you might receive mail from prospective visitors, and it is perfectly acceptable to politely decline a request if you are unavailable.

How to Participate

To have your name added to the list, you need to supply your name, callsign, postal address, home phone number, languages you know, and whether you wish to host or just meet visitors. Send this information to me and I will send it to the ARRL. After a few weeks, the ARRL will send you a copy of the full list just once. If you are a prospective traveller, you can ask the WIA Federal Office for a relevant extract of the list covering your destination. It is not practical to send the entire list owing to its size.

Request to Participants

Some participants have moved, changed telephone numbers, post codes, callsigns, and the like, since they first joined the scheme. Unless you notify me separately, the ITHE information will not change. To assist in bringing the list up to date, a list of VK participants is published at the end of this article.

Recent Experiences

I asked a couple of VK participants to share their views on the subject, and here they are. John Richardson VK2NET, writes:

Travel, one of the few pastimes that helps to unite the world, breaks down the barriers of race, colour and creed. It's the best leveller I know.

Having been an inveterate traveller for more years than I care to admit, I can't say I'm an expert, but I can say that I know a few of the ropes. I know how to get in and out of trouble and most of all, through research before a trip, know how to behave in a foreign culture and become accepted into the daily routine.

The limiting factor to the amount of travel I would do is money; just like 99% of the would-be travelling population. I follow the old adage, "If Mahomed can't go to the mountain, take the mountain to Mahomed", and solve the problem somewhat of not being able to board a plane or ship. In other words, if I can't travel, I bring the travellers to me.

The ITHE scheme is a good way of doing this and all it costs is a couple of meals, a bed, and a bit of petrol. A small price to pay for a lot of enjoyment and a learning experience. The usual format is to receive a letter from a prospective traveller advising the date of arrival, plans for their trip and a request for an eyeball.

My wife and I automatically reply with an invitation to stay with us for a night or two; more if they want. For a few days we have in our home a little bit of America, Japan, UK, or wherever else the travellers may come from.

They have the opportunity to experience first-hand the way an Australian family lives, the day-to-day problems, real or perceived by us locals, taste the different style of cooking, and the like. But most of all, they live with our culture and isn't that what travelling is really all about? We too learn, question, compare.

Time passes all too quickly. It is time to say goodbye to our new-found friends and invariably the last words are "Catch you later" or something similar, and a sincere invitation to visit them when it is our turn to go to their country. There is no doubt that we will be taking them up on their generosity.

These experiences have been brought about by a common interest in amateur radio and the ITHE. I heartily recommend

that you get on "the list" and make the time to welcome our foreign visitors into your home. I guarantee that the rewards will be great. For the occasional or armchair traveller, what better way to meet the world?

John Miller, VK3DJM/GW3WIT writes:

I first heard about ITHE when I read a letter from Douglas G3KPO, in Amateur Radio, in 1988 I think, thanking all the VK2s he had met under the scheme. What attracted my interest was not so much the scheme as the fact that my original callsign was G3WIT, issued in 1967 on the Isle of Wight, and Douglas also lives on the island. As I was planning a trip back to the UK at the time I wrote to Douglas but, that time he was unable to offer me accommodation as he had already booked his own holiday for just the time we would be there. Douglas was, however, able to arrange for us to stay at a local bed and breakfast establishment run by some friends of his.

During the planning of another trip to the UK, in 1991, I again got out the list of ITHE stations and selected a couple of them to help me. Unfortunately one of them whom I wrote to had moved house since the list was printed, but a few phone calls soon traced him, the cost being negligible compared to the total cost of the trip. Unfortunately, he was also going to be away when we were in his area; some people just don't have any luck do they!

As we were flying back to Australia from London's Gatwick airport Ash VK3CIT, the local co-ordinator for ITHE, suggested I contact Roger G3LQP, as he lives about half an hour's drive from Gatwick. I had also mentioned to Ash that I was born in Wales and he said that Roger was an ex-GV. As part of my preparation for the trip I had compiled a list of names and telephone numbers, of people we were staying with, but I hadn't intended to leave it at home. When I rang directory enquires and gave them Roger's name and address I was told that it was a silent number! The only thing to do was to get a taxi from the railway station and hope someone was in, otherwise camp on his doorstep. Roger was doing a bit of decorating when we got there and had been waiting for us to arrive. Needless to say we all had a good laugh. The next day Roger drove us to Gatwick to catch the plane home via Houston.

Well that's on the receiving help side; now for the giving. In the several years I have been a member of ITHE I have only had two requests for help. The first one was from a young American couple who were coming out here on their honeymoon. Unfortunately, they had made all their bookings by the time their photocopied

Continued on page 55

ALARA

Sally Grattidge VK4SHE*, ALARA Publicity Officer

Results of 15th ALARA Contest, November 1995

1	FK8FA	Aimee	548	Top overall Top DX ALARA Member Top Phone Top Pacific Islands Top UK ALARA Member Top VK YL
2	G0VDR	Lynda	345	Top VK3 ALARA Member
3	VK3DYL	Gwen	330	Top VK4 ALARA Member Top VK6 ALARA Member Top VK5 ALARA Member
4	VK4RL	Robyn	295	Top VK Novice
5	VK6DE	Bev	249	Top UK Non-member
6	VK5BMT	Mana	246	Top VK YL CW
7	VK5AOV	Meg	186	Top OM
8	VK4NBC	Bev	179	Top ZL ALARA Member
9	G0KMU	Joan	171	
10	VK3OZ	Pat	170	
11	VK8AV	Alan	165	
12	ZL2AGX	Dawn	164	
13	VK4VR	Val	144	
14	VK3KS	Mavis	135	
15	VK3XB	Ivor	115	
16	ZL1ALK	Celia	111	
17	VK4AOE	Margaret	101	
18	VK6YF	Poppy	100	
19	VK5GGA	SA Girl Guide Ass	99	Top Club Station
20	VK4SHE	Sally	82	
21	VK5ANW	Jenny	69	
22	ZL1OS	Bev	65	Top ZL Non-member
23	VK3DVT	Valda	63	
24	VK2DDB	Dot	61	Top VK2 ALARA Member
25	VK3ALD	Len	40	
26	VK4DRL	Dist Radio Ladies	30	
27	ZL1ANN	Ann	25	
28	VE7YL	Elizabeth	24	Top VE ALARA Member
29	VK3DMS	Marilyn	Check	

Well, despite all my hopes, there were fewer cobwebs blown out of rigs this year, mainly due to somewhat bad conditions. I even heard of one YL who "forgot" about the contest, but perhaps she just did not want to damage her eardrums with the noise on 80 m! However, all those who took part mentioned that they enjoyed the contest, so I guess it achieved its purpose admirably. Contests were reported by one member as "the only time the family leave me alone at the radio". I can vouch for that myself!

It was great to hear the Girl Guides from South Australia using their Club Call and joining in. I am sure they enjoyed catching so many ALARA members on the air and using their radio skills. I understand that they intend to make our contest an annual event for training.

Congratulations again to Aimee FK8FA who worked hard to take the overall winner again as well as the top DX YL award.

Lynda G0VDR also sent in a great log with a magnificent score working from England, and came second overall. She mentions that she enjoyed working the contest very much even if some explanation was needed at that end of the world!

Mention must also be made of Mavis

VK3KS and Ivor VK3XB who worked all their contacts QRP, and did remarkably well under difficult conditions. Gwen VK3DYL is our top VK YL this time, a great effort as she spent more time calling CQ than getting contacts. Alan VK8AV, working portable from his caravan, gained a very good score, but was disappointed that so few girls wanted a CW contact.

That, of course, means that we have no winner for the Florence McKenzie trophy this year. Of course, most of our members upgrade their calls, so there are very few Novices to have a try. Anyone with any ideas on how interest can be raised is welcome to let me know. Probably we will have to wait another year or two until propagation improves.

Thanks to everyone who did send in their log, and let's hope that the numbers get better over the next few years. Perhaps members will be inspired after the ALARAMEET in Perth next September to catch up with each other again in November.

Marilyn Syme VK3DMS, ALARA Contest Manager

Thanks to Marilyn for doing a great job as Contest Manager. As for the Florence McKenzie Trophy, I can only suggest that we organise a CWYL net for a bit of a chat, then practise sending numbers contest style. I am sure there are many out there who find their brains seize up when they actually try CW on air, and a friendly sympathetic group could do much to give people confidence and improve operating skills. The net could even meet on SSB to overcome the initial terror... go to CW, then back to SSB (to find out what everyone has said!) Anyone willing to give it a go?

Marilyn and OM Geoff are going to be super busy from now on. If you are passing through Mildura any time, be sure to seek out the local stamp and coin shop and say hello to them behind the counter.

From Across the Pond

WARO's new call sign is ZL6YL. The official net is on Mondays at 8.00 pm (NZ time) on 3 695 MHz +/-

QSP News

Late Delivery of February Amateur Radio

The *Amateur Radio* mailing house which has served us well for many years, was quite recently bought out by another company. The first delivery of *Amateur Radio* by the new company was the February 1996 issue of our magazine.

The labels, inserts and the magazine

were delivered to the new mail distribution house by 25 January 1996. Despite daily telephone calls by the Federal Office, the magazines were not delivered to Australia Post by the mailing house until Tuesday, 13 February. Not good enough, is it?

Needless to say, as you can see on page 1 of this issue, *Amateur Radio* now has a new mailing house.

DICK SMITH ELECTRONICS

Tune in With Top Performers!

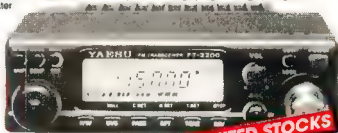
FT-2200 2m Mobile Transceiver

A compact, fully-featured 2m FM transceiver with selectable power output of 5, 25 and 50 watts, it includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid decaet chassis, it provides 49 tuneable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38-tone CTCSS encoder, DTMF based paging and selective calling with auto page/forwarding features, and 10 DTMF auto dial memories. The LCD screen provides a highly legible bargraph signal/PO meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-2608 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

\$699

2 YEAR WARRANTY



LIMITED STOCKS

FT-990 HF All-Mode Base Transceiver

We're overstocked on ex-demo transceivers, so take advantage of this opportunity to save \$500 on an excellent HF base-station rig! The FT-990 offers many of the features of the legendary FT-1000, only in a more compact and economical base station package. Together with clear front-panel layout and labelling, its large backlit meter and uncluttered digital display allows for easy operation. The receiver uses a wide dynamic range front end circuit and two DDSs to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an in-built power supply are standard features, while the customizable RF speech processor and switched capacitance audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band selection.

Cat D-3260

Ex-Demo SAVE \$500!

Only \$3495 **2 YEAR WARRANTY**



LIMITED STOCKS

2m RF Power Amplifier

Boost your 2m hand held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an in-built GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 38 x 175mm (W x H x D).

Cat D-2510

Still Only \$129.95

digitor



For Great Communciation... A Great Range of Accessories!

High Performance 2m/70cm Base Station Antennas

Our range of top-name Brainer base station antennas offer outstanding quality and exceptional value. They are stacked collinear types providing high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester (FRP) outer tubing randoms and gasket seals provide excellent all-weather operation, and they are supplied with compact ground-plane radials for a clean radiation pattern. Stainless-steel mounting hardware ensures a long trouble-free life. They also feature comprehensive instruction sheets to make installation and set-up easier. Both come with a 1 year warranty.



2m/70cm GST-1

Frequency: 144-148MHz, 430-440MHz

Gain: 8dB on 2m, 8dB on 70cm

Max. Power: 200W

Length: 2.5m

Type: 2 x 5/8 wave (2m)

4 x 5/8 wave (70cm)

Connector: SO-239 socket

\$199

Cat. D-3830

2m/70cm GST-3

Frequency: 144-148MHz, 430-440MHz

Gain: 7.9dB on 2m, 11.7dB on 70cm

Max. Power: 200W

Length: 4.4m

Type: 3 x 5/8 wave (2m)

7 x 5/8 wave (70cm)

Connector: SO-239 socket

\$299

Cat. D-4835

BRAINER

2-Way Coax Switch

A heavy-duty, 2-way coax switch that's suitable for Amateur, CB or commercial applications. It's well constructed with a die-cast case and can handle up to 2kW PEP or 1kW CW at 30MHz with less than 0.2dB insertion loss.

Cat. D-5200

\$2995

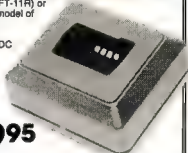


SAVE \$10!

D-5200

Mastercharger 1 Fast Desktop Charger

Made in the USA, the Mastercharger 1 is a compact fast charger that operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor IC (with ΔV full charge detection) to safely charge Ni-Cd batteries between 6V and 13.2V. Suitable for the FT23/73, FT-411/411e, FT-470, FT-26, FT-415/B15 and FT-530, its charging cradle can easily be replaced, allowing the insertion of a new cradle to suit other Yaesu transceivers (eg FT-11R) or different brands/model of hand-holds. The Mastercharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use. Cat. D-3850



\$12995

Now available - Charging cradles to suit various Kenwood, Icom and Alinco hand-holds.

Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling. Wide-band coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, <2.1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50ohm coax cable.

Cat. D-4920

HUSTLER \$349

Hustler RX-2 2m 5/8 Wave Mobile Antenna

HUSTLER

A quality 2m 5/8 wave magnetic mount antenna for mobile or temporary base station use. Supplied with 4.5m coax (PL259 attached). Made in the USA, it provides 3dB gain with a power rating of 100W maximum and uses a flexible stainless steel radiator to minimise wind loading. Cat. D-4805



\$3995

SAVE \$10!



FT-290R II 2m All-Mode Transposable

Covers 144-148MHz and features FM, SSB (USB/LSB), and CW operation with 2.5W or 250mW switchable output power, twin VFOs and 10 memories that store mode and simplex or repeater frequencies. Selectable tuning rates are provided for SSB/CW and FM (SSB- 25Hz/100Hz/2.5kHz and 100kHz; FM- 5/10/20kHz and 1MHz). Mode specific features such as a noise blanker and clarifier control for SSB/CW, plus a full set of functions for FM repeater operation make this unit very simple to operate. It comes with a flexible rubber antenna, an FBA-8 battery holder which takes 9 x 'C' size batteries (standard or NiCad) and a hand-held microphone.

Cat D-2875

2 YEAR WARRANTY



\$999

FL-2025 2m Amp

Turn your FT-290R II into a powerful mobile/base transceiver - this bolt-on RF amplifier will replace the FBA-8 battery holder on the FT-290R II, and boost the transceiver's output to 25 watts. Requires 13.8V DC.

Cat D-2883

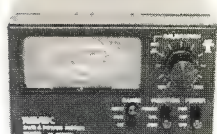


\$299

Buy both for just

\$1195

SAVE \$100!



Revex W56ON HF/VHF/UHF SWR/PWR Meter

Quality Revex wide-band SWR meter offering 2 in-built sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), and SWR. Uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

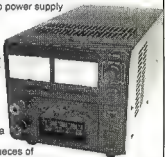
Cat D-1375

\$329

3-15V 25A Power Supply

Like no other - packed with features and affordable! This linear-type benchtop power supply is ideal for service departments, laboratories, ham shacks, and those needing a low-noise regulated DC power source. With front-panel metering, plus high current banana-style & low-current output connections for extra flexibility when powering different pieces of equipment. Internal heatsink & thermally-switched fan provides cooling without protrusions from the metal case (which is just 320 x 150 x 145mm). Specially modified for more reliable long-term operation, it uses a rugged 50 amp bridge rectifier & trifilar transformer. Plus extensive overload protection through dissipation limit circuitry for the main pass transistors, a 30 amp instantaneous current limit, AC mains circuit breaker a transistor thermal fuse & fused auxiliary secondary winding.

Cat D-3800



\$299

PHONE, FAX & MAILORDER SERVICE & Yaesu Brochure Hotline

Outside Sydney (FREE Call) 1800 26 3922

Sydney and Enquiries - 9937 3366

Fax: (02) 805 1986 or write to:

Dick Smith Electronics, Mail Orders, Reply Paid 160

PO Box 321 NORTH RYDE NSW 2113

All major Credit Cards accepted. O/Nite Courier Available

Yaesu stocks and some antennas not held at all stores, please

contact your local store for availability, or phone 1800 22 6610

DICK SMITH
ELECTRONICS

B-2946

NSW - Auburn 21 5399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Bondi 381 1444 • Brookvale 9905 0441 • Burwood 744 7299 • Campbelltown 27 2190 • Chesham 411 1985 • Chulora 642 8922 • Gore Hill 499 5311 • Gosford 25 0235 • Hornsby 477 5533 • Hurstville 580 8523 • Katoomba 56 2092 • Liverpool 600 9886 • Maitland 33 7866 • Miranda 525 2732 • Newcastle 61 1896 • North Ryde 9937 3368 • North Sydney (Greenwood Plaza) 9959 5433 & 65 Barry St 9964 9468 • Orange 616 400 • Parramatta 685 2188 • Railway Square 211 3777 • Penrith (047) 32 3400 • Sydney City York St 267 9111 & Mid City Centre 221 0000 • Tamworth 66 1711 • Wollongong 28 3800 ACT • Belconnen (06) 253 1785 • Fishwick 280 4944 VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 9890 0699 • Coburg 9383 4456 • Dandenong 9784 8377 • East Brighton 9592 2366 • Essendon 9379 7444 • Frankston 9783 9144 • Geelong 232 711 • Highpoint 9318 6300 • Knox Townpoint 9800 3456 • Melbourne City • Strand Central Arcade 9663 5320 & 248 Bourke St 9639 0398 • Richmond 9428 1814 • Ringwood 9679 5338 • Springvale 9647 0622 • QLD - Adelaide 356 3733 • Booval 282 6200 • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Capalaba 245 2870 • Cherrade 359 6255 • Indooroopilly 878 4944 • Maroochydore 791 800 • Mermaid Beach 5578 5600 • Rockhampton 27 9644 • Southport 5532 9033 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 SA • Adelaide City Putney St 232 1200 & Myer Centre 231 7775 • Elizabeth 255 6099 • Enfield 260 6088 • St Marys 277 8977 • Westlakes 235 1244 WA • Balcaratta 240 1911 • Carnington 451 8666 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1480 • Northbridge 328 6944 TAS • Glenorchy 732 176 • Hobart 31 0800 • Launceston 344 555 NT • Darwin 81 1977

MAJOR AMATEUR STORES SHOWN IN RED.

Up North

Not only are the ZL YLs planning to invade the ALARMEET in Perth, but they are also considering entering a team in the second IARU Region 3 Amateur Radio Direction Finding Contest in Townsville, 15 - 20 July 1996. Are there any Aussie YLs who would like to compete? If so, please contact Wally Watkins VK4DO, PO Box 432, Proserpine Qld 4800 who is looking for YLs to make up the Australian team. This is your chance for fame and glory, and to represent your country

Welcome New Members

Dawn VK4HER, joined 27 Nov 95, sponsored by Val VK4VR (congratulations Dawn, you are our first H call in ALARA).
Ngairé ZL2UJT, joined 27 Nov 95, sponsored by Margaret VK3MAS
Barbara KR4SJ, joined 27 Nov 95, sponsored by Christine VK5CTY.
Beverley ZL1OS, joined 5 Jan 96, sponsored by Mary VK3FMC.

A Bit of DX with Mavis VK3KS

On 29 November last year Mavis worked a YL, Saijai, on 21 MHz CW at 0917 UTC. Saijai is a very good CW operator and she also uses 7 and 14 MHz. She is 28 years old, has only been on the air for a year, and is the only YL station in Kanchanaburi.

Saijai sent Mavis a card, and says she also works on LSB on 7060 kHz in the Thailand net at 1300 UTC every day, so look for her there if you would like a contact. Saijai's address is Saijai Charoenkitkan, Box 9, Kanchanaburi 71120, Thailand.

On 27 December, Mavis had a visit from Jerne K6INK whom she has sponsored since 1979, and her companion Bruce W6JWL. It was wonderful to be able to meet after being in touch for so long. Mavis's OM, Ivor VK3XB, consulted the old log books and found he had contacted Bruce in the ARRL CW contest in 1939, 56 years before they met!

**C/o PO Woodstock, QLD 4816*

poke about with telemetry. Most specialise to some degree or other. Why? Because the field is wide and expanding, that's why!

It started to expand when amateur radio came into being and I believe it will continue to expand in the future and take directions we can't dream of at present. We hear the knockers say that amateur radio is finished. Only a closed mind could consider it so. Amateur radio is just beginning. Nowhere is this more true than in satellite operation.

Satellite Imagery

Two areas of satellite operation that I find especially fascinating and addictive are imagery and telemetry. Weather satellites like the NOAAs can provide the devotee with endless hours of learning and entertaining experiences. NOAA ground stations are easily within the grasp of the amateur.

Even closer to home, a number of amateur radio satellites carry CCD cameras for remote imaging. The UoSats have carried such cameras for years. UO-9 had one before Joe Public had ever heard of a CCD camera. The signals are easily captured and software is available for the decoding and display of the images.

I recently downloaded a number of image files from KO-25 and processed them using software written by Colin Hirst VK5HI and Jeff Ward G0/K8KA. The narrow field views are of comparable quality to the NOAAs. They clearly show streams, rivers, mountains and coastal features. It is interesting to note the time that the image was taken and run it through InstantTrack. You can see just where the satellite was when the camera was fired. With luck you can rotate the image and line up features with a map.

Beyond 2000

Some interesting and mildly disturbing stuff has been emerging of late regarding the turn of the century and its effects on computer time keeping. It seems that much software development occurred at a time when 31 Dec 1999 was either too far away to bother about or was not seen as a problem.

Try it out on your favourite tracking program. After your computer clock to a couple of minutes before midnight on 31 Dec 1999 and watch while your tracking program tracks a satellite through midnight. Some versions of DOS do strange things to the TZ environment variable. It appears that big business is gearing up to spend millions of dollars to cope with problems that are yet to surface. Maybe we will have to look at it too.

There is another debate raging about the turn of the century and millennium. It concerns just when it actually happens

AMSAT Australia

Bill Magnusson VK3JT*

National co-ordinator

Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI

AMSAT Australia net:

Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz (usually during summer).

Secondary 3.885 MHz (usually during winter)

Frequencies +/- QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

The Day of the Specialist

I'm told that a specialist is someone who learns more and more about less and less until eventually they know everything about nothing. Right or wrong, this is the day of the specialist.

When I started in amateur radio, starry eyed and with a brand new AOCF, in 1950, specialists were thin on the ground. Everyone wanted to know all there was to know about the various aspects of amateur radio. Your shack just had to have bits and pieces relating to every facet of the hobby. 80 and 40 metre gear. 20 metre DX rig. VHF of course ...the epitome.

To aspire to DXing on 166 MHz AM was a mark of distinction. All gear was home made. Yep, we did it all! Today people specialise. There is the DXhound, the six metre specialist, the CW brass pounder, the packet network enthusiast and, of course, the satellite operator.

Each area calls for a specialised knowledge of the subject. Take satelliting. There is orbital geometry, Doppler shift, keplerian elements, computing, circular polarisation, digital encoding, imaging, telemetry and more. Even within satellite operating there is specialisation. Some satellite operators specialise in the digital birds. Some in exotic modes like "S" mode. Some treat the high flying birds like orbiting repeaters. Some poor souls, like me, even

One school of thought says that the century, and therefore the millennium, ends at midnight on 31 Dec 1999. This is likely to be the popular opinion. There's something magical about those figures 2000.

Closer examination, however, reveals that there was no year ZERO. The first year of our current calendar began with the first second of the first day of the first month of 0001 AD. Now a century requires 100 years to pass. Therefore, the end of the first century AD did not come around until the last tick of 100 AD (not the first tick!). Carry that forward and you can see that the current century and millennium will not end until the last tick of 2000 AD. If ever there was an excuse for TWO slap-up, knock-down, drag-em-out parties this is it!

RS-12

It has been reported that the rarely turned-on RS-12 mode "T" transponder is working. This will give an opportunity for modestly equipped satellite users to participate. The mode "T" uplinks between 21 210 MHz and 21.250 MHz, while the downlink is between 145.910 MHz and 145.950 MHz. The transponder inverts the passband. You can use SSB or CW on this device.

*359 Williamstown Rd, Yerraville VIC 3013
Packet: VK3JUT@VK3BBS.AMEL VIC.AUS.OZ
CompuServe 100352.3065
ar

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 2175
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:

Call Sign (if applicable):

Address:

State and Postcode

Awards

John Kelleher VK3DP - Federal Awards Manager*

Additional Countries Added to the DXCC List

Hot on the heels of the operation by OH2AM (et al) from P5 North Korea, comes news of the addition of Pratas Island and Scarborough Reef to the DXCC countries list. I will quote from the official news releases for both new entries.

"The ARRL DX Advisory Committee (DXAC) has voted 12 to 4, and the Awards Committee have voted unanimously, to add Pratas Island, BV9P, for contacts made 1 January 1994 and after. This is based on DXCC Rules Section II, point 2(a) - Separation by Water. Pratas Island, located in the South China Sea, is administered by Taiwan.

QSL cards will be received by the ARRL DXCC Desk starting 1 April 1996. Cards received before that date will be returned without action.

Because of QSL Card irregularities, it will be necessary for anyone who has a picture card from the January or March 1994 operations to obtain a replacement card from QSL Manager KU9C. The picture cards are not acceptable for DXCC Credit."

The second new addition comes in an ARRL news release dated 23 January 1996. "The ARRL Board of Directors at their meeting in Savannah, Georgia, approved a Membership Services Committee recommendation to add Scarborough Reef to the ARRL DXCC Countries List. The vote was 11-yes, three-no, and one abstention. Scarborough Reef is added to the list based on DXCC Rules Section II, point 2(a) - Separation by water.

QSL cards will be received by the ARRL DXCC Desk starting 1 April 1996. Cards received before that date will be returned without action. The ARRL DXCC Desk has announced that the start date for Scarborough Reef is 1 January 1995. Only QSOs made on, or after, that date will be eligible for DXCC credit. The first accredited operation took place in April of 1995. The 1994 DXpedition did not qualify as a "land-based operation."

Full details of the proposed 1996-1997 operation to Heard Island will be published shortly. Administration of this expedition appears to be going well.

For those interested in the K1BV Directory of DX Awards, which now lists 2409 awards (and growing), the address is Ted Melinosky, 65 Glebe Road, Spofford, NH 03462-4411. Ted is offering this comprehensive publication to VK

operators for \$US17.00 (surface mail) and \$US28.00 (airmail). I rely on this Directory for many of the awards that have been published in this magazine, and it is an excellent reference for requests that I have received from time to time.

CW Operators of the British Commonwealth Award (Canada)

Make CW contacts with British Commonwealth stations after 1 January 1980 SWL OK. Basic certificate is earned by completing requirements for Class 1, then higher levels individually or all at once.

Class 1

1. ZL-North Island
1. ZL-South Island
3. VK1-5 or 7.
1. V85 VS6 or 9M2, 6, 8.
2. VU2
3. ZS1-6.
2. VP2, or V2, 3, 4.
3. VE, VO, VY2 or 3.
6. G.
- A total of 22 QSOs.

Class 2

1. ZK or ZL Island.
1. P2 or VK Island.
2. VK6 or VK8.
1. 8Q, VU7, 4S7, or 9V.
1. C5, 9J, 9G or ZD8.
1. VP8 or 9.
4. VE2 VE3 or VY9.
3. VE4, 5, 6 or 7.
3. GI and GM.
2. GW
2. GD GJ or GU.
1. ZB2.
- A total of 28 QSOs.

Class A1

QSO 15 more stations in 15 different call areas from the following A2, A3, C2, C6, H4, J3, J6, J7, S2, S7, T2, T3, VE8, VP5, VR6, VQ, VY1, YJ8, 22, ZC, ZD7, ZD9, ZS8, 3B, 3D, 5B, 5H, 5N, 5W, 5X, 5Z, 6Y, 7P, 7Q, 8P, 8Q, 8P, 8Q, 8R, 9H, 9L, 9X and 9Y. A total of 15 QSOs, and a grand total of 65 QSOs for all classes.

A GCR list is acceptable. There is no charge for the award but at least five IRCs are needed to cover postage. Apply to Vince Thornycroft VE1RJ, 35 Clearview Avenue, Fredericton NB, Canada E3A 1J9

*PO Box 2175 Caulfield Junction 3161

ar

Club Corner

Riverland Radio Club Inc

Communications 96

"Communications 96" is the theme which will be sponsored by the Riverland Radio Club Inc, with support from the VK5 Division of the WIA, for the 1996 convention to be held on Saturday, 27 April 1996.

In the past, the type of convention held was usually only amateur radio related. Whilst we are still catering for the amateur and general radio people, this year we will be endeavouring to emphasise all facets of the latest technology in communications. This will present a larger spectrum for public interest.

"Communications 96" will be held in the K M Tucker pavilion at the Renmark Show Grounds. The doors will be open to the public from 9.30 am.

If you want to have a buy or sell stall, it is advisable to book your site early. Bookings are \$10 per trestle and can be lodged with the Secretary, Riverland Radio Club, PO Box 646, Renmark SA 5341. Enquiries can be made to the Secretary on 085 955 320, or the Co-ordinator on packet VK5BM@VK5BRL.RIV.AUS.SA.OC.

A large number of commercial companies have shown their interest. A "Communications 96" dinner will be held at the Renmark Hotel on the Saturday night. Bookings with the Secretary are essential for this dinner.

Once again we look forward to your company on the day.

Les Williams VK5BM, Co-ordinator
Doug Tamblin VK5GA, Secretary

Australia Amateur Packet Radio Association

Things move fast in the packet world these days and the Australia Amateur Packet Radio Association (AAPRA) has to keep up. We have come a long way from the days of Commodore 64 and Microbee computers running with simple but effective modems, supplied by AAPRA.

All that has changed thanks to lower priced IBM compatible computers. Current computers are really fast, too fast for us to use their full capacity for packet radio. They can store loads of data and match the speed of packet modems which can run at speeds of up to 9600 baud.

AAPRA is speeding up its network linking to 4800 and 9600 baud. Increasingly the links are moved to the UHF band to reduce congestion on two metres. As well as wormhole links within Australia, several gateways provide instant

connects to USA, the UK and other distant places. The link to KO4KS-1 in Florida provides access to their ROSE net which is a good starting point for exploring the American network. The links to London and Lancashire rely on Netrom to get around but this seems slower in the UK due to congestion.

The AAPRA Newsletter DIGIPEAT keeps members informed about all this and more. It lists the packet programs which AAPRA distributes, including both the software and English manuals, eg pak6t and Baycom. Our software library of shareware disks includes titles of interest to all amateur operators such as Winpak and Ultrapak which run in the Windows environment and the NOS family of programs including NOSview the version supporting the book "NOSintro" written by Ian Wade and available from WIA bookshops.

Amateurs wanting information about membership or other packet related subjects are invited to phone (02) 489 4393 or write to VK2IN QTHR.

Geoff Page VK2BQ
Publicity Officer AAPRA

Radio Amateur Old Timers Club (RAOTC)

Test Success

The 20 m VK3OTN broadcast to VK6 on Monday, 5 February was re-transmitted locally on the WIA VK6 2 m and 70 cm repeater network, as well as on 80 m.

Our thanks are due to Clem VK6CW who thought up the idea, Don VK6HK who controlled the repeater network, the team who helped him, and the WIA VK6 Division who made the repeater network available.

Annual Meeting

The annual meeting and election of office bearers will be on Wednesday, 6 March at the Bentleigh Club in Yawia Street, Bentleigh. Be there at 12.30 pm for a 1.00 pm start. The cost will be advised and bookings are essential with the Secretary, Arthur Evans VK3UQ, QTHR.

Readers who are not members of the RAOTC are very welcome to attend provided that they book. We recommend attendance as we have been fortunate to arrange Jack Bleakley as the speaker. Jack was a Kana code operator in one of the very top-secret RAAF Wireless Units which went all the way to the Philippines with General Douglas MacArthur. Jack is the author of the sold-out book "The Eavesdroppers". Don't miss it!

Alan Double VK3JMD

or



AUSSALES

For Sale By Tender

**ANTENNAE - EX ARMY
SIGNAL STATIONS,
GREENBANK AND
ACACIA RIDGE, BRISBANE.**

Model No. 530-1, Log Periodic
Antenna, Qty. 2 No. Frequency Range: 2 to 30MHz; Power Handling Capacity: 10KW average, 20KW PEP; VSWR: 2.5:1; Polarization - Horizontal; Mast: 40.54m Ht.

Model No. 501-1, Log Periodic
Antenna, Qty. 3 No.; Frequency Range: 2 to 30MHz; Power Handling Capacity: 10KW average, 50KW PEP; VSWR: 2.5:1; Polarization - Horizontal; Mast: 43.03m Ht.

Model No. 548-3, Log Periodic
Antenna, Qty. 6 No.; Frequency Range: 3 to 30MHz; Power Handling Capacity: 10KW average, 50KW PEP; VSWR: 2:1; Polarization - Horizontal; Twin Masts: 61m Ht each

"ROCKET" Mast, straight steel, 67.7m
Ht., platform for heavy communication equipment; used as repeater for microwave.

**N.B. PURCHASERS WILL HAVE TO
DISMANTLE.**

Tender No. 95/40043

**Closing Date: 2.00 pm THURSDAY
18 APRIL 1996.**

**INSPECTION: ONLY ON TUESDAY,
10 00 am, 2 APRIL 1996**

**Contact: Graham Krueger, Aussales,
Purchasing Australia**

**Ph. (07) 3233 7882
Fax: (07) 3233 7895**

DAS

Contests

Peter Nesbit VK3APN - Federal Contest Coordinator*

Contest Calendar March - May 96

Mar 2/3	ARRL DX SSB Contest	(Jan 96)
Mar 9/10	BERU CW Contest	(Feb 96)
Mar 16/17	WIA John Moyle Field Day	(Feb 96)
Mar 16/17	BARTG RTTY Contest	
Mar 23/24	CQ WPX SSB Contest	(Feb 96)
Apr 6/7	SP DX SSB Contest	
Apr 6/7	Israel DX Contest	
Apr 12/14	JA DX CW Contest (High Bands)	
Apr 13/14	International Grid Location Contest	
Apr 27/28	Helvetia DX Contest	
May 4/5	ARI Contest CW/SSB/RTTY	
May 11/12	CQ-M Contest	
May 25/26	CQ WPX CW Contest	(Feb 96)

Although multioperator contesting is fairly common overseas, it has yet to really catch on in Australia. An exception is the John Moyle Field Day, of course, which always attracts a good multi-operator contingent. This makes good sense for a field day, because extra pairs of hands are always welcome when setting up the site, not to mention the assistance with operating. And if that's not enough, there's the simple pleasure of sharing a unique experience, away from it all in some remote location, with like minded souls. Even if you don't win, a great time can still be had by a!

Unfortunately, the multi-operator sections in our other contests attract far fewer entries. This is understandable, given the lower density of amateur stations here than in, say, the USA, Russia, and the Ukraine (where multi-operator contesting is very popular). In those countries, many operators have one or more "big guns" a stone's throw away, and it's often much better to band together with friends and enjoy contesting from a single optimum location. Fortunately, few of us have to contend with local big guns (or bigger guns than ours, err... us), so there is less incentive to go to the bother of establishing a multi-operator or club station.

What are the ramifications of all this? I think we tend to view amateur radio as a sociable activity. After all, our core activity is *talking to people*. We talk from our homes, our cars, our campsites, and bits of rock in the ocean. We are on first name terms with dozens or even hundreds of people around the world, many of whom would be delighted to put us up for a few nights and show us around, if we were to visit their countries.

Ironically, this very sociability can often lead to us sitting alone in our ham shacks, cut off from our families and other sources

of "warm" human contact, and all but written off as *unsociable* by others who do not understand our hobby!

Many of us obtained our licences at a young age. We had few responsibilities, and many friends. Our considerable spare time was spent visiting other amateurs, going to radio club meetings, and generally having a ball. Contests were an opportunity for friendly competition with our friends, and after each event we would eagerly get together to compare notes. The friendship aspect was so strong that I vividly remember, around the age of 18, jumping on my pushbike and riding 5 km to a friend's place at two thirty in the morning, right in the middle of the VKZL Contest, just to share the excitement and to see how the DX sounded around there. Then, after a couple of hours chatting, I jumped on the bike and rode back home, just in time for the pre-dawn opening. Neither of us set any records that weekend; however, it still stands out in my memory, nearly 30 years later, as one of those wonderful times one never forgets.

Another memorable experience concerns the 1968 ARRL DX Contest, which in those days occupied two weekends per mode in February and March (ie a total of four weekends). That year, my friends and I decided to try a multi-operator entry, so we spent several weekends getting the equipment set up, and we even went to the trouble of installing a 15 m beam (loaned by one of the other operators) on to my tower. When the contest arrived, my mother (who was always ready for a party) set up a sort of marquee in the back yard, and reminded me to have a bottle of beer ready "in case the boys would like some refreshment". Well, that sort of invitation needed no repetition and, as I recall, we started the contest with about three dozen bottles of

beer (to share between four people)!!

Now, in those days, EMC was something only fastidious types worried about, and after all we were amateurs "able to bend the laws of physics". We truly believed (well, sort of hoped, actually) that our three antennas in the backyard would be able to co-exist, and started out with all three transmitters going on three different bands at once! What chaos! Of course none of us could hear anything, and even worse, we were keying each other's T/R switches. So even if we managed to find frequencies which were clear of cross-interference, the receivers would still go dead in unison with the transmissions on the other bands. So we reduced it to two transmitters, and found that by transmitting at more or less the same time, we could just about work two bands simultaneously! Unfortunately, no two QSOs were ever the same length, so it was extremely hard to stay synchronised. I pity the poor Ws and VEs who were trying to work us, and wondering why there were all these gaps in our transmissions. Well, at our end the shack was full of operators shouting "wait!" and "go" to each other, to make the other operator stop just long enough for us to get a call sign or number, and vice versa! If it sounds slightly wacky, well, that's exactly what it was.

Anyway, as the evening wore on, the beer was progressively consumed, until the party aspect took over. Operators were staggering out the shack door "for fresh air", and one of them was later discovered lying in the front yard ("just looking at the stars, folks!"). I was in such a merry mood that the others nearly did away with me, just to put an end to the stupid jokes I kept playing on them. In short, we ended up having a very good time, and even managed to work some stations to boot!

The second weekend was more organised than the first, but very hot. So half way through, in true contest spirit, we adjourned to the beach for several hours "to further plan our invincible contest attack". Of course the only thing we attacked was the odd bit of seaweed, and occasionally each other, but once again it was good fun.

As the years went by, one by one we got married and moved interstate or overseas, and our regular get-togethers ceased. Contesting became a solitary effort, and these days there is the nagging feeling that something is missing. Now, whilst these are my own personal experiences, I'm sure there are many readers with similar stories to share about the friendships and good times they have had through amateur radio, and who might also suspect that contesting should mean more than sitting alone in a shack, and receiving the odd certificate.

Well, here's the secret, and it's very simple. Before the next big contest, contact several friends and suggest putting together a multi-operator entry. Maybe you'll win, or maybe you won't, but that is not the main point. The main point is to get together with friends and do something different for a change, share the experience, and hopefully score well. You will find all the old enthusiasm returning, and you will certainly feel you've done something special and memorable.

The next major contest is the John Moyle Field Day which, of course, is ideal for trying out some multi-operator activity. If you hurry, there should still be enough time to get out on that date, remember the RD and VKZL contests later this year, which can always do with more multi-operator entries. The next step is up to you. So, pick up the phone and dial a friend...now!

Congratulations to Martin VK5GN and David VK2AYD, who have been selected as Australia's representatives for this year's World Team Radio Competition, to be held in northern California this July. The WTRC runs under the auspices of the IARU DX Contest, and is a special event in which countries around the world are each invited to send a team of two top ranking contest

operators. The teams are given the use of various well-equipped contest stations belonging to local amateurs, and allocated special contest call signs. The event is designed to put all competitors on an equal footing. I'm sure you will all join me in congratulating Martin and David on their selection, and wish them good luck in this most prestigious event. More will be reported as it comes to hand.

Many thanks this month to VK3KWA, VK5GN, HB9DDZ, KA5WSS, SPDXC, CQ, Radio Communications, and QST. Until next month, good contesting!

73s, Peter

SP DX Contest (1996-SSB)

1500z Sat to 1500z Sun, 6/7 April

This contest is held on the first full weekend of April, and usually has a good level of Eastern European activity. Categories include single operator (single or all band), multioperator, and SWL Bands are 160-10 m. Send RS plus serial number; SPs will send RS plus a two letter province code. Score three points per QSO with each Polish station, and obtain the final score by multiplying by the number of provinces worked (max 49). In this contest, multipliers are counted only once, even if worked on more than one band.

SWLs must receive the call sign and number sent by Polish stations, plus the call sign worked. Each SP may be logged only once per band.

Send your log, summary sheet, and multiplier check list to arrive by 30 April to Polskie Związki Krotkotalowcow, SPDX Contest Committee, Box 320, 00-950 Warsaw, Poland (note the tight deadline). Disk logs are welcome (ARRL/ASCII file format).

Polish provinces are SP1, KO, SL, SZ, SP2, BY, GD, EL, TO, WL, SP3: GO, KL, KN, LE, PI, PO, ZG, SP4: BK, LO, OL, SU, SP5: CI, OS, PL, SE, WA, SP6: JG, LG, OP, WB, WR, SP7: KI, LD, PT, RA, SI, SK, TG, SP8: BP, CH, KS, LU, PR, RZ, ZA, SP9: BB, CZ, KA, KR, NS, TA.

Note that this contest alternates between SSB and CW, so next year's event will be CW only.

Israel "Holyland" DX CW/SSB Contest

1800z Sat - 1800z Sun, 6/7 April

This contest is designed to promote contacts between Israeli amateurs and the rest of the world on CW and/or SSB. Classes are single operator all bands, multi-operator, SWL. Send RST plus serial number; Israeli stations will add their area abbreviation. Score two points per 160-40 m QSO with Israeli stations, and one point per QSO on other bands. The multiplier equals the total Israeli areas from each band (counted separately on each band). Final score equals total points times total multiplier. Send logs postmarked by 31 May to The Contest Manager, Israeli Amateur Radio Club, Box 17600, Tel Aviv 61176, Israel. Awards include a trophy to the outright winner, wall plaques, and certificates to the top scorers in each country (minimum of 50 QSO points).

The NEW PacComm PicoPacket

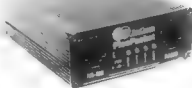
Compact! Only 25 x 62 x 75 mm. Smaller than a pack of cigarettes.

Powerful! Z-181 high integration MPU with one megabyte address space. A real powerhouse.

Inexpensive! Only \$245 (32k RAM model). Introductory Price.

Perfect Beginner's TNC! Every feature you would expect in a 'normal size' AX.25 1200 baud TNC, plus.

On-Line HELP! So easy to learn! Type Help and a command name (or part of a command name) and receive the correct spelling, shortest abbreviation, default value(s), acceptable values, and a short explanation of its function.



Terminal programs for both DOS and Windows™ included.

Personal Message System with all the state-of-the-art features

APRS (Automatic Packet Reporting System) compatible comprehensive GPS support built-in.

email address: kevca@gil.lpswichcity.qld.gov.au

EPROM and RAM are socketed for ease in upgrading firmware and increasing memory.

RJ-45 serial cable with adapter to DE-9S. RJ-45 radio cable has real wire — solders easily to radio connectors.

Instruction manual, schematic, Quick Command listing, power cord included.

Options
128k or 512k RAM.

Full-time GPS port (second serial port) with real-time clock and 128k.

Mating GPS receiver. A Trimble SVeeSix-CM2 receiver fits in a separate case the same size as the Pico and attaches via an audio stereo cable.

Kevin Cavanagh

222 Brisbane Valley Highway
Wanora (Ipswich) Qld 4306
Tel (074) 643-954 Fax (074) 643-963

Kevin's sales only **FREECALL**

1800-639-099

It's the putting RIGHT that counts



PacComm

Japan DX CW Contest (High Band)

2300z Fri to 2300z Sun, 12/14 April

The object of this contest is to contact as many Japanese stations as possible on 14, 21 and 28 MHz CW. Classes include single operator (single and multiband), single operator QRP (5 W max OP), and multi-operator (one Tx). Max operating period for single operator stations is 30 hours (show rest breaks clearly in log), multioperator stations full 48 hours. Multi-op stations must remain on a band for 10 mins min.

Send RST plus CQ zone number, JA will send RST plus preference number (01 - 50). Score one point per JA QSO on 14 & 21 MHz, and two points on 28 MHz. Points are doubled for QSOs with QRP stations (QRP stations must send /QRP). The multiplier equals JA prefectures + Ogasawara Isl (JD1) + Minami-Torishima Isl (JD1) + Okino-Torishima Isl. Send log postmarked by 10 May to Five-Nine Magazine, Box 59, Kamata, Tokyo 144, Japan. (Rules for this year's contest were not received by the magazine deadline, so the details are subject to confirmation).

Second International Grid Location Contest

1200z Sat to 1200z Sun, 13/14 April

This is a fairly new, and unusual, international HF contest, organised by WBSVZL and KA5WSS and promoted via the Internet. The objective is to contact other amateurs in as many Maidenhead grid squares as possible. Classes include, single operator (phone, CW, and mixed), multioperator two transmitter mixed mode; and rover mixed mode. Maximum power for all stations is 150 W.

All HF bands may be used, excluding the WARC bands (30, 17, 12 m). Stations may be contacted once per band per mode, except for rover stations who can be worked once per band per mode per grid square they visit. Rovers will sign "rover" on phone, and /R on CW.

Exchange Maidenhead grid square (eg EM10) plus operator's name. (The rules don't state whether RS(T) is necessary, or if the name is mandatory. Just listen in and go with the flow - Peter). If the grid square is unknown, the QSO is valid for points credit only. Count one point for each valid QSO. The multiplier equals the number of grid locators worked on each band, summed for all bands, regardless of mode. For non-rovers, the final score equals the total QSO points times the total multiplier. For rovers, the final score equals the total QSO points from each grid times the total multiplier from each grid.

Send your log within 30 days to Gridloc Contest, PO Box 180703, Austin, Texas 78718-0703, USA, or via the Internet to geoli@bga.com. Awards will go to the leading stations in each continent, the top ten scorers in each division worldwide, and to other leading entrants depending on the amount of activity. Note that this is an "open log" contest, meaning that logs will be made available electronically to anyone who is interested. (Just in case the results don't make it past the Internet, anyone seeing them please send me a copy for publication.) See below for information on the locator system.

Hawaii DX CW/SSB Contest

1300z Sat to 1300z Sun, 27/28 April

Work only Swiss stations, CW on 160-10 m

and SSB on 80-10 m. You may work a station only once per band, regardless of mode. Score three points per QSO; multiplier is the total number of Swiss cantons worked (max 26 per band). Send log to be received by 14 June to Nidau Zinsstag HB9DDZ, Salmendörfl 568, CH-4338 Rhensulz, Switzerland. Cantons are AG, AI, AR, BE, BL, BS, FR, GE, GL, GR, JU, LU, NE, NW, OW, SG, SH, SO, SZ, TG, TI, UR, VD, VS, ZG, ZH.

Maidenhead Locator

For those who are not familiar with it, the Maidenhead Locator system means the division of the earth's surface into a rectangular grid, with each rectangle of the grid measuring two degrees wide (longitude) by one degree high (latitude). Each grid square is uniquely identified by two letters and two numbers, termed the locator.

The letters refer to coarse squares, measuring 20 degrees longitude by 10 degrees latitude. These squares start where the international date line meets the South Pole, and moves north and east from there. The starting point is therefore 180 degrees west of Greenwich, and 90 degrees south. So if you look at your map, the square immediately above and to the right of the starting point is identified AA. The opposite corner of this square is at 160 degrees west, 80 degrees south. The first letter increments as you move in an easterly direction, and the second increments as you move north. The highest letters are RR.

Each of these large squares is divided into 100 smaller squares, (ie Maidenhead squares), arranged 10 high by 10 wide. The square at the lower left is identified 00, and the one at the upper right is 99. As with the letters, the first

number increments as you move in an easterly direction, and the second increments as you move north.

A map of Australia overlaid with the Maidenhead grid squares is shown on page 35 of November 1987 *Amateur Radio*, and a procedure for finding your locator is described on the following page. For those who do not have access to that issue, here are the locators for the capital cities around Australia (where two locators are shown, you will have to determine whether you are north or south of a one degree latitude line passing through your city):

Canberra QF44
Sydney QF55/56
Melbourne QF22
Brisbane QG62
Adelaide PF94/95
Perth OF77/78
Hobart QE36/37
Darwin PH57

Those who live elsewhere will have to ask around, refer to the map, or else determine their locator using a computer program. A suitable program was written by John Martin VK3KWA (ex ZJC), and published on page 34 of December 1990 *Amateur Radio* (the program calculates a six digit locator, so just ignore the last two letters). John has since written a more accurate version of the program, which takes account of the non-spherical shape of the earth, and he will be happy to supply a copy upon receipt of a disk and return postage. His address is QTHR, or via the Federal Office. This program will also be published in the magazine later this year, prior to the next Ross Hull Contest.

*PO Box 2175, Caulfield Junction, VIC 3175

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

R B (Raymond)	WILSON	L20519
G E (George)	BAKER	VK2CCGB
D D (Don)	FRAKES	VK2ETC
W (Bill)	YATES	VK3SB
RH	BAILEY	VK6AWN
RL	TREPP	VK6BT

George Edward Baker VK2CGB

George Baker was born on 23 January 1922 at West End, Brisbane. On leaving school he qualified as an electrician and followed this trade until he entered the Air Force in 1940, aged 18 years, as an electrical mechanic with the 21st Squadron station in Malaya.

When the Japanese invaded in 1941 he was one of a party who escaped in a small boat. After a perilous journey he arrived back in Australia and was re-posted to New

Guinea, where he served until hostilities ceased.

On return to civilian life, George married Laurie May Hopper in 1947 and resumed work in the electrical trade in Newcastle where he carried on his own business. On retirement, he and Laurie settled at Manning Point in 1980, and he obtained his amateur licence. He served for 15 years as a member of the volunteer bushfire brigade and was an enthusiastic amateur until illness curtailed his activities. He was well known to east coast amateurs especially those of Taree, Great Lakes, Oxley and Westlake Radio Clubs.

He passed away at Manning Base Hospital on 23 January 1996, his 74th birthday. Condolence is expressed to wife Laurie, sons Warren and Ian and their families.

A large gathering including many amateurs attended his funeral service at Taree Salvation Army Citadel.

G Hunziker VK2BGF

Divisional Notes

Forward Bias - VK1 Notes

Peter Parker VK1PK

VK1RAC Gets New Antenna

Users of the Black Hill 6900 repeater should notice improved coverage since the replacement of the repeater's lightning-damaged antenna. The antenna was replaced on 13 January by members of the VK1 Repeater Committee. Experimental tests confirm that the new antenna has boosted the repeater's signal by approximately 6 dB. This means a better signal from the repeater in marginal areas.

Novice Theory Classes

These classes started last month. For information on these or future licence classes, please phone our Education Officer, Jeff VK1JE on 294 1688.

EME Video Shown at Meeting

Local amateurs enjoyed a video presentation on December's Moonbounce experiments, at the Divisional meeting on 21 January, thanks to Chris VK1DO and Geoff VK1CO. The video, which included shots of the 10 metre dish at the University of Canberra, equipment used, and EME contacts to the other side of the world, was enjoyed by all who attended. Those present were particularly impressed by the quality of the presentation.

Amateur Radio on Show

Several VK1s took the time to operate amateur station VK1BP, transmitting from the 1996 ACT Scout Summer Camp, located at Camp Cottermouth. Stations from all states of Australia, New Zealand and China were contacted. During the time of the camp, attended by approximately 400 scouts and leaders, dozens of young people were exposed to amateur radio. At least one scout intends to become an amateur himself. The amateur station, established in an old bus, was set up by Dave VK1DL. Operators included John VK1AJM, Gar VK1KGR and Neil VK1KNP. If you would like to become involved in future activities of this type, please phone Dave VK1DL on 291 0097.

John Moyle Coming Up

The John Moyle Field Day is just one or two weeks away, and it is not too late to set up a field station. There are sections for single and multi-operator stations, and you do not have to be a club to be able to set up a multi-operator station. It would be good to have several portable stations operational from VK1 this year. So, reserve at least part

of the weekend of 16 and 17 March for your participation in the 1996 John Moyle Field Day.

Malia Station Seeks Moonbounce Sides

Last December's Marconi Day 70 cm EME experiments from VK1 have attracted world-wide attention. After the tests were finished, Jim VK1FF received an e-mail message from an EME enthusiast in Malta.

The message reads, *I have read all about your activity commemorating the 100th anniversary of Marconi's first experiments. Unfortunately, I am not active on those frequencies (70 cm), otherwise I would have contacted you earlier*

I wonder whether you know of anyone in your institution who would be interested to set up skeds with me on two metres EME. I would be grateful if you would pass the word around on your local packet and/or radio magazine. My INTERNET e-mail address is henrygs@mbox.voi.it. My Station is a TS850SAT to a LT2S Transverter, and 2 x 4CX250B, putting out 650 watts, @x 3219CC, MGF 1302 preamp, DSP59+ audio filter.

Many thanks in advance for all that you can do to propagate my invitation.

Meanwhile I would kindly extend my greetings for a Merry Christmas and a Happy New Year to you and all members of the VK1 Division.

73 from Henry 9H1CD

Stolen Equipment

A local amateur had his vehicle and contents stolen on the evening of 31 December 1995. The vehicle taken was a 1987 Ford Fairmont Ghia, white in colour. It included a 1/4 wave magnetic mount antenna on the boot and the contents of the vehicle included a Yaesu FT212RH two metre mobile transceiver (details appear elsewhere in this issue of *Amateur Radio* in the *Stolen* column).

VK2 Notes

Richard Murnane VK2SKY

Annual General Meeting

The Annual General Meeting of the NSW Division will take place on Saturday, 20 April at Amateur Radio House, Parramatta (NB, not Doonside!). Please read the Division's Annual Report, and the AGM agenda, particularly any motions that may be listed. If you are unable to attend, please give your proxy to someone who is, so your voice as a member of the VK2 Division may be heard.

NSW Clubs List on Web

Clubs that responded to the Council's request for updated club details are now listed on the Divisional World Wide Web page. Please note, however, that currently each entry contains only the club name, correspondence address, contact phone number, and whether the club runs classes and/or examinations. If you would like further details to appear on the Web page, such as your club's special interests and projects, please advise the Divisional office.

Dave Horsfall VK2KFU reports that, during the first two months of operation, the Divisional Web page was "visited" on average about 80 times per day. The visitors were mainly from Australia, New Zealand, and the United States, with a fair scattering of European countries for good measure. There are many potential WIA and NSW club members out there, so it makes sense to provide them with the information they need to find (and join) your club.

Thought for the month: Why kill time when you can employ it? — French proverb.

VK3 Notes

Jim Linton VK3PC

Special Projects - Financial Assistance

Limited funds are again available to affiliated clubs or individual members who wish to undertake projects of general benefit to members and our hobby. Requests for assistance will be considered on their merit, and will be conditional on an application meeting specified criteria. Prior to making application for assistance, a copy of the criteria and conditions should be obtained by writing to the WIA Victoria Secretary.

Requests for assistance will be considered conjointly at a meeting of Council, and funding allocated according to the merit of the project, and the demonstrable benefit to members. Special consideration will be given to projects that are innovative in concept, and recognise the advances in communications technology today.

Project scope is not limited and does not necessarily have to include construction or installation of electronic equipment. Applications close on 30 May 1996, and will be evaluated in June.

Invitation - WIA Victoria 2010 Forum

The WIA Victoria Council would like to hear from members interested in attending an open forum to discuss:

VK6 Notes

John R Morgan VK6NT

General Meetings

During 1996, the Wireless Institute of Australia (WA Division) will hold its General Meetings on the LAST TUESDAY of the month. This change has been necessitated by a room-booking problem, and it is possible that it can be reversed mid-year. If in doubt, listen to the VK6WIA News Broadcasts, or telephone the Secretary on (09) 351-8873. The following are the remaining meeting dates for this year: 26 March, 30 April (AGM), 28 May, 25 June, 30 July, 27 August, 24 September, 29 October and 26 November.

These meetings are held in the Theatrelet on the second floor of the Westral Centre, East Perth, commencing at 8 pm. All interested persons (members and non-members, licensed or listener) will be made welcome. Free coffee and biscuits are available at "half time".

It should be noted that, as a consequence of the same problem, the monthly meetings of Council have been relocated to the library of the Medical Physics Department at the Royal Perth Hospital. For directions, contact Bruce Medland-Thomas VK6OO on (09) 224-2267 during working hours.

January General Meeting

More than 50 members attended the first GM of the year, which was the best attendance for many months.

The change in meeting-dates means that Jim Rumble VK6RU, who has run the VK6 QSL Bureau since 1937, can no longer attend every GM. His proposal that the Bureau become a by-mail-only service, as is the case with all the other Divisions, was discussed, but not decided. Jim stated that, in fact, the great majority of his users have been operating this way for many years. To participate by mail, send your stamped, self-addressed envelopes to VK6 QSL Bureau, PO Box F319, Perth WA 6001.

It was announced that the SMA had rejected the Federal WIA's application for all Australian radio amateurs to be permitted to use the AX or VI prefix on the recent Australia Day. It was stated that the SMA's reason was that they did not consider the occasion to be of sufficient national importance! There was embittered laughter.

Following the business meeting, there was a discussion concerning the decline in the attendance at the monthly meetings, and whether the meetings should be discontinued. Many opinions were expressed, and various possible causes

and ideas proposed, but the final vote was about 10-to-1 in favour of continuing the monthly meetings. Since the Division is required, by its constitution, to hold monthly meetings, this vote would not seem to have resolved the problem.

Annual General Meeting

The VK6 Division's AGM will be held on 30 April 1995 at the Westral Centre, East Perth, following the General Meeting which starts at 8 pm. For more detail, please refer to the "VK6 Notes" in the February 1996 issue of *Amateur Radio*.

South-West 'Fest

The South-West Amateur Radio Group (SWARG) has announced, via the packet radio system, that it will hold a "bring-buy-swap-sell" meeting on Sunday 21 April 1996, from 11 am to 4 pm, at the Club Rooms on the corner of Symmonds Street and Ocean Drive, Bunbury. To help with directions, the organisers will monitor both the Bunbury (VK8RBY, 146.650 MHz) and Mt William (VK6RMW, 146.900 MHz) repeaters.

You are invited to "bring the family" as there is easy access to the nearby beach. Food and drink will be available during the event, and there will be a "sausage sizzle" at the end of the day. The sausages will be provided!

For additional information, please contact SWARG's President, Bob VK6ZRT, or Vice President, Brian VK6DT. They are correct in the call-book, and are both @VK6AJJ.

If You Have Material ...

All material for inclusion in this column must arrive on or before the first day of the month preceding publication. Packet mail may be sent to VK6NT@VK6ZSE.#PER.#WA.AUS.OC, or write to PO Box 169, Kalamunda WA 6076, or telephone (09) 291-8275 any time.

"QRM" News from the Tasmanian Division

Robin L Harwood VK7RH

This is a formal reminder that the Divisional Annual General Meeting will be held on Saturday, 23 March at 1400 hours Eastern Daylight Time at the Domain Activity Centre. Time has elapsed for the tabling of Notices of Motion and for Nomination. As this column is being compiled on 30 January, I cannot gaze into a crystal ball and say what these are. Please check for a formal notice in the Public Notices Column of both the Launceston "Examiner" and Hobart "Mercury" as per the requirements of

1. amateur radio in today's society, and how we must adapt to changing technology and community attitudes; and
2. how WIA Victoria can better serve the needs of newcomers to the hobby.

WIA Victoria must have a long term plan for the future as it heads for its centenary in the year 2010. This needs to be solidly based on the expectation of members and the resources they are prepared to provide.

The forum is intended to be a forward looking "think tank" to assist in providing achievable goals and preferred future direction. It is not for airing of parochial and internal political differences and problems.

If there is sufficient interest it is proposed the forum will be conducted on a Sunday from 10 am to 3 pm early in May, and that it will be conducted in accord with an agenda provided by the members attending.

The WIA Victoria Secretary would like to receive a written expression of interest by 5 April from any member wishing to attend and actively participate. This should include a suggested discussion item for the agenda. Dependent on the number of members who display an interest, a suitable venue will be arranged and a written invitation sent to all who wish to take part.

It is time we forgot petty differences of opinion and personality clashes and did something positive and constructive to preserve our hobby and bring it into the next century. It may very soon be too late for us as an "endangered species" and we will become an extinct breed.

News and information

A reminder that the VK3BWI voice broadcast now goes to air on the first and third Sunday of the month. However, there will not be a broadcast on the first Sunday in April, which is Easter Sunday.

The broadcast continues to break news items of interest to radio amateurs and shortwave listeners, which occasionally re-appear on other broadcasts up to six weeks later. One interstate broadcast had no less than half a dozen items first broadcast on VK3BWI.

The packet bulletins of WIA Victoria News & Info, which began in their current format last year, are continuing to be extremely popular. The number of pick-ups of these items issued under the callsign VK3BWI shows they are widely read.

Contributions of material for inclusion in the VK3BWI voice broadcast and packet bulletins are most welcome. They should be sent to Broadcast News, WIA Victoria, 40G Victory Blvd, Ashburton 3142, or fax on (03) 9885 9298.

Corporate Affairs, where these will be listed

At the Annual General Meeting of the Northern Branch, which was held on 14 February, at St Patrick's College, the following officers were elected unopposed: President, John Cornish VK7JJC; Secretary, Tony Cordwell VK7ZAC, and Treasurer, Ian Hart VK7KIH. Bob Richards VK7KRR stood down as secretary/treasurer due to ill health.

CW Questionnaire

In the January issue of this magazine, there was an insert to gauge the opinions of the members as to whether or not CW should be retained as part of the NAOCP and AOCOP examinations. With one day remaining before the polls close, the preliminary count indicates that most favour the retention. Of the 76 so far received, out of a total of approximately 280, 41 have indicated their preference for the status quo whilst 27 favoured CW being dropped. There were three votes in favour of retaining CW for the AOCOP, whilst dropping CW for the Novice, and three voted that CW be dropped for the AOCOP but retained for the Novice.

Please note that VK7RAF on Mount Faulkner has moved to 146.650 MHz with negative offset. Also, I believe that several UHF repeaters in the Northwest and on the West coast, plus the 2 metre East Coast repeater VK7REC, are now interlinked by means of inserting DTMF tones. I don't have the exact sequence but I am sure that these can be obtained on request. VK7RAF on 2 metres is also interlinked with VK7RAB on UHF at Mount Arthur and also with the Northeastern 2 metre repeater VK7RNE at Tower Hill by inserting a 141.3 Hz tone. Antennas on VK7RAA at Mount Barrow have now been fixed, courtesy of Joe VK7JG and Peter VK7PF.

Meetings for March

Southern Branch on Wednesday, 6 March at 2000 hours local at Domain Activity Centre.

Northwestern Branch on Tuesday, 12 March at 1945 hours local. For venue listen to VK7WI

Northern Branch on Wednesday, 13 March at 1930 hours local at St Patrick's College, Westbury Road, Prospect.

Divisional Annual General Meeting on Saturday, 23 March at 1400 local at Domain Activity Centre, Queen's Domain, Hobart

How's DX

Stephen Pali VK2PS*

If you are a true DXer, you ought to know the rules of the game. The ARRL produces at least three to four updated versions of the DXCC rules and lists of the DXCC countries each year. If you follow the published lists of the DXers, the so called "DX ladder", you will observe that some of the DXers, from time to time, miraculously climb the DXCC ladder to an excessive height in a very short time.

Is there some cheating along the route to these heights?

Here are some extracts from an article written by Bill Kennamer K5FUV, the Manager of the DXCC Desk, as it appeared in the October 1995 issue of QST "It is sad to report that there are still a few pretenders out there who somehow, although they probably have the station and the skill, want the rewards of being known as great DXers without doing the work. For them there is always the easy way. Get a card any way possible, and pretend they've worked that 3Y0 station on 160 metres or the BV2 at noon on 80. If necessary they even print their own cards.

So far this year we've disqualified six DXers who tried to push the limits too far. As usual, since the first disqualifications in 1937, we won't be giving these people further recognition by printing their callsign again. You won't be seeing their callsign in the listings any more for a while, in fact quite a while. For those who do not know, the penalty is pretty stiff for someone who's accomplished a lot, or at least says they have. First the DXer's record is cleared from the ARRL data base, even the legitimate contacts. Then the DXer must wait five years before reapplying to the Awards Committee for entry into the program. No contacts will be accepted for the period from disqualification to re-entry. The DXer will have a fresh start. One other thing. His record will be flagged forever, noting that he didn't play by the rules once, and his QSL cards will be subjected to greater scrutiny and random audits.

The six disqualified DXers this year is probably a record. But the year is not over yet and there are four more cases waiting on the desk for further action. One of those will be positively brought before the Awards Committee soon, probably before you read this, and the others are awaiting confirmation from DX operators and QSL managers. It is likely that the number of disqualifications may go even higher before the year is over.

If anyone is considering trying to get away with something, or who may have in the past, remember that every submission

may be subject to scrutiny. Enough said this year. Let's hope this isn't the subject we'll have to cover every year, or even every ten. But even if someone gets by with it once, maybe even twice, it still is likely they'll get caught."

Groote Eylandt - VK8NSB/P - IOTA OC-141

Stuart VK8NSB, a Novice operator, had a very successful mini-DXpedition of two weeks on the Island from the QTH of Terry VK8ETC. He operated only on the Novice sections of the 80, 15 and 10 metre bands on SSB and CW. In total he had 1973 QSOs, out of which 514 were in the CW mode. He had about 100 contacts on 80 metres CW/SSB, including five DXCC countries.

His QSL Manager is VK8HA, at the call book address, but Stuart will also reply to QSLs directed to him, Stuart Birk n. PO Box 205, Karama, Darwin, NT 0812, Australia. The usual direct QSLing rules apply, that is a self addressed envelope and adequate return postage.

Stuart hopes to activate three more new islands during this year, possibly with the help of a full call "island hopper".

Deal Island - IOTA OC-195 - VK7OI

News of the start of the expedition reached me too late to appear in the February issue of *Amateur Radio*. The activity took place from 31 January until 6 February 1996. The expedition reached the island, which is in the Furneaux Group, by a ferry licensed to carry ten passengers and an amount of limited cargo.

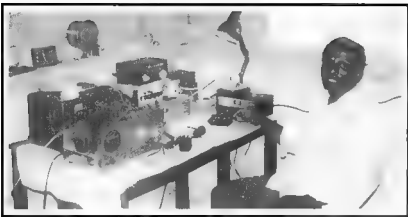
The island is administered by the Tasmanian Government and is off-limits to the general public. Special Government approval was necessary for the land ng.

The operators were George VK3OO, Mirek VK3DIX, Tad VK3UX, S av VK3CTN, Mark VK3DO, Steve VK3OT, Jack VK5CJC, Wim SP5DDJ and Wayne VK3TWE. They used the callsign VK7DI

All bands were used on CW, SSB and RTTY with the help of Yag, vertical and wire antennas. A colour QSL card will be sent to those who request it. QSL via the VK3 QSL Bureau or direct to Tad Dobrostanski VK3UX, 17 Sunburst Ave, North Balwyn, VIC 3104, Australia. Please include a SAE and return postage (two IRCs are requested from overseas amateurs).

Scarborough Reef - BS7H

As predicted in the last issue of *Amateur Radio*, the ARRL Board of Directors, at the meeting on 19/20 January, accepted Scarborough Reef as a new DXCC country



Mani VU2JPS and his equipment.

as from 1 January 1995. The 1994 DXpedition did not qualify as a land based operation.

The voting was 11 for acceptance and three against acceptance, with one vote abstaining. QSLs will be accepted after 1 April 1996 by the DXCC desk. Early in 1995 there were 326 DXCC countries, then came North Korea (P5), Pratas Island (BV9P) and now Scarborough Reef.

Andaman Island - VU4

In the past few months quite a lot has been written, and even more comments made on the a.r. about the activities of Mani VU2JPS, who is now stationed in Port Blair, Andaman Island is a very rare DXCC country.

Mani's signals were weak. He listened on SSB and replied in CW. He was assisted by Praran VU2AU who took a list on 20 metres. Later, Denver 4S7DA came to his assistance. Again, Mani received the signals in SSB and replied in the AM mode. He was very weak but a number of VKs and ZLs made the contact. The reason for his weak signals is simple. All the equipment in Mani's shack is home-built with minimum costs. His 20 metre transmitter has CW and AM capabilities with a very low power output. His amplifier has to be seen to be believed.

Incidentally, Mani is the Senior Engineer's assistant, and he is employed on the technical staff of "All India Radio", the national broadcaster. His wife Mala is also licensed as VU2MTC. They live very modestly in a two roomed house.

Jim VK9NS, last year in September on his way to Europe, visited Mani and spent a few days with him. During this time, with Jim's assistance, Mani's antennas were improved and a plan has been developed to assist him with modern equipment which already has been donated for this purpose.

However, the Indian red tape bureaucracy works very slowly, and the importation of amateur radio equipment is

linked to an actual VU licence and requires an import certificate issued by the WPC amateur radio section of the Ministry of Communications.

After many months of waiting, Jim VK9NS has now obtained an Indian amateur licence, with the probable callsign of VU2JBS. Jim hopes to be in India by mid-March. He will go to Port Blair via New Delhi, where the donated equipment, which he will carry himself, will be cleared by customs. The main purpose of his visit is to get the equipment, including coax cables, and beam antenna, etc, safely to Mani. Whether Jim will operate from Port Blair has not been decided yet, but it is not likely that he will operate from there. Mani has applied for a VU4 prefix callsign, and this will be forthcoming sometime in the future.

Whilst all this is happening, an Indian Government official, who is also a licensed radio amateur, will travel to Port Blair, and thence to Nicobar Island where he will spend four to five days. Later, the same person will travel west to India's other island group, the Laccadives, VU7, where he will stay for the next two years. During that time he will train the locals, at least those who are interested, in amateur radio. He will then examine them, license them, and establish a local Amateur Radio Club with the view of substantial activity from this other much sought after DXCC country.

Incidentally, the DXCC is still hesitant to accept Mani's activity from Andaman as legal. They want some clarification as to whether or not Mani can operate without further clearances from someone other than the Indian PTT. It appears to be a security matter, as other Indian hams, according to the DXCC, cannot get permission to operate from Port Blair.

According to Jim VK9NS the situation in India is that one needs a general security clearance before one can operate amateur radio. (Please note! In the 1950s, in Australia, one could not get an amateur



H.F. Multi-band Mobile Antenna 80m to 10m

★ All bands on one whip
Other Bands Optional

No tuner required
Low V.S.W.R.

Rugged - Reliable
Dependable

Outbacker "Perth"
Outbacker 088 "Classic"
Outbacker "Junior"

Heavy Duty Spring Mounts
Split Models
Trunk lip mounts
Helical Dipoles
Long wire Dipoles
Baluns

New from Europe, Recorded in Nashville



Music By the HAM BAND
14 amateur radio songs

Available on Tape for \$ 20 - CD \$30
Including Postage

Now available from

MELBOURNE
Daycom Communications
Ph 03-5435444

ALICE SPRINGS,
Farmer Electronics
Ph 083-522388

DARWIN
Integrated Technics Services
Ph 089-615411

SYDNEY
Emtronics
Ph 02-2110888

PERTH
Tower Communications
Ph 4701118

ADELAIDE
Johnson Electronics
Ph 08 257 1081

For further information, and for all international enquiries call us direct at:

TERLIN AERIALS
5 Yampit Way
Willetton W.A. 6155

Ph +61 (08) 3545444
Fax +61 (08) 3545455

Send \$ 5.00 for a 15 minute international video
teletext with every antenna purchase.

licence if one was not an Australian citizen and a British subject, and in those times it was a five years waiting period before one could become an Australian citizen.)

Indian amateur licences and residential addresses are interlocked. If you change your residence, your licence has to be endorsed in writing, with your new address. This procedure will cost you money and a waiting period of many weeks or months. During this time you are not permitted to operate. If the change of address involves a distance of many hundreds of kilometres, say from one district into another, one needs a new security clearance which will take many months. Again, you are not permitted to operate during this transitional period.

No wonder the average Indian amateur, with limited financial resources and a binding job, is not inclined to travel great distances in India for DXing purposes. Mani was in Port Blair for many, many months before he appeared on the air. Only time will tell and one always lives in hope.

Pratas Island - BV9P

This is a new DXCC country as from 1 January 1994 with QSL cards to be accepted by the ARRL DXCC desk from 1 April 1996.

It was three years ago when the process began to add Tung-Sha-Dao (Pratas Island) to the DXCC list. In January 1994 a group of amateurs visited Pratas Island but, because no non-Taiwanese amateurs were permitted to remain on the island, Marti La.ne VR6BH operated for about two hours during the refuelling stop of the aircraft, before returning to Taiwan.

Later, in March 1994, another Pratas trip was organised and conducted by a group of Taiwanese. This expedition produced, over a five day period, in excess of 5000 QSOs with all parts of the world.

About that time, William Wu BV2VA

started to organise a bigger activity to take place in 1995. Taiwanese Senator Ken Chang BV2RA was very helpful in succeeding to get an authorisation to invite non-Taiwanese to remain on the island during the expedition. Originally, approximately eighteen amateurs were included on the flight to Pratas, but only eight stayed on the island, among them Jun JH4RHF, Mike JH1KRC and Wayne N7NG. The remainder returned with the C-130 flight later in the afternoon. Marti was on the flight to Pratas, and made the first QSOs. However, due to business obligations, he was unable to remain during the expedition.

Conditions were not the best and, at times, AC power supply problems limited the transmitter outputs and they were forced to operate from batteries, running the transceivers at about 25 to 50 watts. The Taiwanese army assisted by providing large batteries. The food was basic army issue and sleeping quarters were air-conditioned. The DXpedition made about 25,000 QSOs, out of which 4200 were made with North and South America, 7500 with Europe, and the rest with Japan and the local area.

Future DX Activity

* Martin VE3MR, and his wife Truus VE3MRS, will be active from Aruba as P40MR and P40TR respectively. QSL via home calls

* Andy will be active from Bangladesh for more than a year on all bands using the callign S21YE. QSL via GOEHX.

* Gary E Neil, who operated from the Central African Republic as TL8NG, is now in Scutari, Albania, where he should stay until September. He operates under the callign ZA5B. QSL via WA1ECA

* Laura Marcelle 3A2MD is active every day between 1400 and 1600 UTC on 14175-14180 kHz.

* A group of American operators is

planning to activate Midway Island KH4, in March. All bands, all mode activity is planned.

* Barry ZS1FJ/G4MFW expects to be active from 3B6 Agalega and St Brandon Islands.

* There is a move to activate Melville Island, north of Darwin in the Northern Territory, by Stuart VK8NSB and another 'island hopper' early in March as VK8MI. The activity will be for four days. (See "From Here There and Everywhere" Ed)

* FR5HR is waiting for a ship to go to Crozet, Kerguelen and Amsterdam Islands. He was planning to leave on 12 February with a stop at Crozet at the end of February.

* Gerard F2JD is now active from the Malagasy Republic as 5R8JD until September on all bands and all modes. QSL to 6FAJA.

* Jim G0IXC will be active from Prasin Island (AF-024) until 13 March as S79XC on SSB IOTA frequencies of 7055, 14260, 21260, and 28460 kHz. QSL to his home call.

* Paul KK6H will be operating from the Kingdom of Tonga as A35RK until 20 March, mainly on CW and RTTY. QSL via W7TSQ.

* Expect quite a lot of DX activity with a lot of "strange" prefixes in the CQ WW WPX SSB Contest, which will take place in March.

* Frank DL8HYR will operate from Tunisia, from 1 to 10 March with the ARC callign 3V8BB.

* FR5ZQ/G was spotted on a US DX Packet cluster at 1900 UTC and 1933 UTC on 14023 kHz.

Interesting QSOs and QSL Information

* 9N1AA - Sabs - 14207 - SSB - 1156 - Jan (E). QSL to PO Box 4292, Kathmandu, Nepal.

* KC6JF - Joe - 14255 - SSB - 1147 - Jan (E). QSL to PO Box 66, Koror, 96940, The Republic of Palau.

* Y112N - Raxaq - 1420 - SSB - 1044 - Jan (E) QSL to PO Box 55072, Baghdad, Iraq.

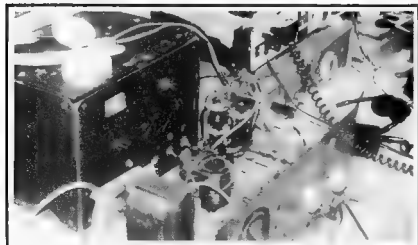
* JU5R - Khos - 14015 - CW - 0532 - Jan (E). QSL to JT1KAA, PO Box 639, Ulan Bator 13, Mongolia.

* CE0Y/JA7AYE - Nob - 14008 - CW - 0644 - Jan (E) QSL to JA7AYE, Noboyasu Hosaka, 98-115 Haramae, Dogawara, Miyagi, Japan

* 4X3000/4X1BD - Ben - 14198 - SSB - 1217 - Jan (E). QSL to 4X1BD, Ben Zion Dalfen, Box 23010, Jerusalem, 91230, Israel, or via the QSL Bureau.

* OY9JD - Jon - 7044 - SSB - 1052 - Jan (E). QSL to Jon Ingolvur Dam, Marknagilsvegur 26, FF-100, Torshaven, Faeroes.

* 3W6GM - Franz - 14198 - SSB - 1242 - Jan (E). QSL to DF5GF, Franz Rebolz,



The home-built 40 m amplifier of Mani VU2JPS.

Torackerstr 5, D-79183, Waldnch, Germany.

* OA461QV - Cesar - 14255 - 1141 - Jan (E). QSL to OA4QV, Cesar Armando Aguirre Mesinas, Box 957, Lima 18, Peru.

* ZL2000 - Rib - 14175 - 0716 - Jan (E). QSL to Gisborne 2000 Award, PO Box 1017, Gisborne, 3801, New Zealand.

* W4PGX/KH9 - Bob - 14255 - SSB - 0518 - Jan (E). QSL to KB4VHW, Robert C Ave, 3260 Desert St, Pensacola, FL-32514 USA

* VK9XZ/P-6 - Bill - 14260 - SSB - 0614 - Jan (E) QSL to VK6UE, W Billington, 30 Bindaree Tce, Kingsley, WA 6026.

From Here There and Everywhere

* The Melville Island IOTA DXpedition (OC-173) will be from 8 to 11 March 1996. Two operators, VK8NSB and VK8HZ, with two stations, will be active on all bands from 6 to 80 metres. Permission has been obtained from the local Aboriginal Council who owns the land. QSL via VK4AAR, A Roorcroft, C/o Post Office, Dalveen, QLD 4374 Australia (direct only).

* Interesting statistics from the latest DXCC news release. During 1995 a total of 6044 applications (544,368 QSLs) were received at the DXCC Desk. This compares with 8187 (673,321) during 1994.

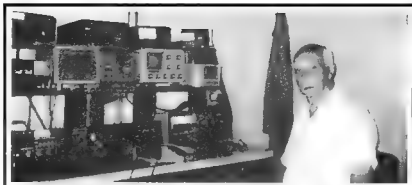
* Bob ZL1RS (R J Sutton, 109 Wright Rd, RD2, Katikati 3063, NZ) is the QSL Manager for stations ZL2AWJ, ZL4DO, ZK2RS, ZK1RS/South Cook, ZK1RS/North Cook, A35RS, and ZL8RS. Bob has returned from an 18 months overseas assignment, has moved QTH, and has now settled down to QSLing.

* Many of you had contacts with an "Independent North Somalia" amateur radio station with the callsign of 600A or similar. According to Bill Kenner K5FUV, DXCC Manager, that operation is not acceptable for DXCC purposes.

* Percy VK4APC is the originator and principal net controller of the "ANZA" net. The net was started by Percy on 20 May 1970 (twenty six years ago!) on 21300 kHz, and was moved later to 21205 kHz (each day at 0500 UTC). The net has operated without interruption ever since. During the past two years, due to deteriorating propagation, the net has opened up a secondary frequency on 14164 kHz. To read more about this remarkable DXer, see the September 1990 issue of *Amateur Radio*. Our photo shows Percy, who will be 87 years old this year, with his equipment. Congratulations

* The DXCC Desk is still waiting on some documentation from 5A1A that would show that the Government has authorised an amateur radio station.

* ZS64RI was active from Robben Island (AF-064) from 26-29 January on all bands CW, SSB, RTTY. This is the island where



"ANZA" Net founder Percy VK4CPA, formerly VK3PA.

the present South African President, Nelson Mandela, was imprisoned for many years. QSL to KA1JC.

* Bill Horner, VK4CRR of Mollish farm, has a new callsign, VK4FW.

* In March, Tom 9K2ZC and his wife Donna 9K2YY, will leave Kuwait.

* Hazel AL7OT/TN7OT will leave the Congo in April and will start QSLing after she returns home to Alaska.

* The American SSB DX Group meets on 7195 kHz at 0700 daily

* Ron Wright ZL1AMO has asked that everyone be informed that he is no longer connected in any way with the group planning the Kermadec ZL8 trip for May this year. He was involved, but is no longer.

* Mome Z32ZM says DO NOT SEND "green stamps" because they are removed by postal workers and the rest is thrown away. Send two IRCs, no reply envelope, but a return address label. QSL to callbook address of YU5CXY, but do not write any callsign on the envelope.

* GB50SWL is commemorating the 50th anniversary of the International Short Wave League (ISWL) during 1996. QSL via G0DBX.

* GB60BBC is commemorating the 60th anniversary of the starting of a regular high-definition TV Service in November 1936. QSL via the RSGB QSL bureau.

* According to C31HK licences for guest operators no longer will be issued in Andorra.

* XV7SW is licensed to operate on 1827, 3505, 7013, 14016, 21016, 21019, 28016 and 28019 kHz. QSL via SM3CXS or direct to Rolf Salme, Embassy of Sweden, Box 9, Hanoi, Vietnam.

* PS7KM has a new address: Karl M Leite, Rua Estacio de SA 1838, 59054, 590 Natal, R N Brazil. Please, no callsign on envelope.

* The DXCC, in a News Release dated 9 January 1996, has approved the following operations as valid for the award: 3A/1YRL, 3A/IK1OWC, 3A/12MOV, 3A/1ZB, 3A/18FXT, 3W5FM, 4B9CQ, 6Y5/DL1DA, 7P8CW, 7Q7DC, 8Q7CW,

9J2CE, 9N1AN, 9N1SXW, 9R1A, CN2NI, D2RU, DU1/SM5ENX, HI/DL1DA, HS02CJ, HS/DF8AN, HS/KM4P, J3J, J3X, J3Y, TT8BP, TY8G, VK9LX, VK9LZ, VK9NM, VK9XRS, VR2/DF8AN, VU2/DJ9RB, XT2DP, XZ1A, XY1HT, XZ1X, XZ1Z, ZA5B, ZA9B, ZA/P80AIO, ZA/PA0HTR, ZK1DI, ZL7CW, ZL7PYD and ZV0TI. In an earlier press release, dated 4 October 1995, the following activities were approved: 3A/IK1SLP, 3A/IK4WWMG, 3D2CT, 3D2CU, 4H1TR, 4J0/IK2BHX, 4K1HX, 4S7FEG, 4S7ZAG, 5H1CK, 5H3CK, 5N3/SP5XAR, 5R8EI, 5R8EJ, 5R8EH, 5T0AS, 5T6E, 5X4A, 5X4B, 5X5THW, 6Y5/JR7QKH, 8A9JH, 8G1YR, 9M8BC, 9M8HN, 9N1WT, 9X/ON4WW, 9X/SM7KOJ, CE0Z, CN2AW, CN2SR, CN5I, CY9/WA4DAN, CY9/AA4VK, CY9/KW2P, CY9/W5JU, CY9/K4TVE, D68QM, DU9/KG8QH, EA8/PA3GIO, ED8USA, EY8/K4YT, H44/DJ9RB, LD/LX3FCP, LX/DL4FCH, P29VDI, S79NEO, SV5/PA3GIO, SV8/G3SWH, T5RM, TA/UA3AB, TG9/F5UKV, TI9JJP, TN7OT, TR8SF, TT8AB, TT8NU, TU2/KM4P, V2/G4DIY, VK9CJ, VK9XI, VP2MFM, XT/TU5BA, XU6WV, XT2CH, Z38/DL1SCQ, Z38/DL2SCQ, ZL8/G4MFW, A71A/IV3TMM and C9W6RJ.

QSLs Received

3W5FM (2 m - mgr Nataly Stechelokov, PO Box 66, Vladimir, 600011, Russia) - T30DP (4 w/VK4CRR) - 4L50 (6 m TA7A) - 3B8CF (5 w op) - CE0Z (4 m KOIYF) - T32ZB (3 m op).

Thank You

Many thanks to my helpers who supply me with the information which makes this column possible. Special thanks to VK2FH, VK2KFU, VK2JF, VK2XH, VK3UX, VK4AAR, VK4MZ, VK5WO, VK8NSB, VK9NS, ARRL DXCC Desk, and the publications *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *QST*, *INDEXA*, *The DX News*, and *GO list QSL Managers list*.

*PO Box 83, Dural NSW 2198

ar

Over to You - Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Hamad Second Chance

I placed a Hamad under the Miscellaneous heading. Will give away to a good home *Rola 33B magnetic tape reproducer*.... which appeared in the December 1995 issue of *Amateur Radio*. The response was almost instantaneous. It went to the first to call, who convinced me that not only had he a good home for it, but also good use.

About an hour and a half later, a collector of vintage tape recording equipment rang and introduced himself, but I did not note his name. He was rather disappointed, and we parted after a short conversation which also related to a South Australian pioneer of tape recording, by the name of (Jack?) Ferry. He (the caller) said that someone (who obviously read Hamads in *Amateur Radio*) told him about the advertisement.

Some time later I realised that I have an old Akai tape recorder, as well as typewritten notes on tape recording in general, written by the above Mr Ferry.

Perhaps they may be of interest to this person. Could his informer please contact him again.

Yuri Slovachevsky VK5ZYS
5 Bowen Avenue
Seaton SA 5023

Cardsorter's Complaint

This is by way of an appeal to all of you who send QSL cards. I am a volunteer handler and have just sorted over one thousand cards, and my eyes simply ache.

Most volunteers are seniors and many of us have a spot of trouble reading callsigns. Especially those made on a computerised system. I mean the ones with all the information cramped on a label the size of a postage stamp.

Come on, fellas, please make the callsign easily readable and legible.

Would it not be possible to design a standard reverse side to these cards? One clearly stating all pertinent information, especially the callsign of the recipient.

I realise this is a pipe dream, but please make the effort and print the call to be at least readable without the use of a magnifying glass.

Another gripe whilst I am on the subject. PLEASE keep your cards to the standard postcard size. Many beautiful cards are ruined because they are oversized and the edges become frayed.

So, friends around the world, take pity on the bureau handlers and make your cards easily readable.

Ron E Martin VA3RON .. G0UNW
(VE3ORN @ VA3BBS)
44 Threadneedle Street
Willowdale ONT M2H 1Z6

CREST Information

Your favourable comment regarding CREST in the December editorial was much appreciated. It is refreshing to see somebody open-minded enough to realise that both CB and amateur networks can work when needed.

However, it may interest your readers to know about the current capabilities of CREST NSW Inc. Other states could also have similar capabilities.

As your comment implies, our primary frequencies are 27 MHz and 477 MHz, but we also have a frequency allocated just above the 40 metre band as well as Royal Flying Doctor Service frequencies.

Along with this, most NSW Police have one or both of the CBRS transceivers accessible to them as well as other services such as SES, Ambulance, some country hospitals, NSW Bushfire Brigade vehicles, some NSW Fire Brigade units,

etc. Fire Brigade also have CBRS radios installed in depots and vehicles.

The general impression that CREST is made up of ratbag CBers has subsided greatly in this area as people discover the procedures and discipline involved with our organisation. CREST has been in operation now for almost 20 years and, in my experience, is well organised and ready to operate.

In the Hunter region, CREST has a favourable working relationship with WICEN (both Hunter and Central Coast regions) and we are respected for our standards and infrastructure. We realise that we do not have all the capabilities of the amateur service, but maybe we are not as limited in our operations as some may presume.

In response to the licence debate, my personal view (not associated with CREST NSW Inc) is that as soon as licence fees were discarded on the CBRS bands it left open slather for large and small commercial companies to use these frequencies to their hearts' content. This would not cause a problem except that now there is no need for them to have discrete frequency commercial radios. So the SMA loses more revenue and we, as private citizens operating radio purely for recreational or experimental purposes, bear the brunt of it.

Thank you for your time and attention and all the best to *Amateur Radio* for 1996.

Jeff Green VK2MCD
PO Box 455
Cessnock NSW 2325

ar

WIA News

Allen alert

Australia's 64 metre diameter radio telescope at Parkes, in NSW, was the scene of some excitement recently when signals were received by the sensitive equipment at about the same time every evening during radio astronomy observations of deep space.

Over four months last year, Professor Peter Backus, of the California-based Project Phoenix, picked up the mysterious signals each evening with the Parkes radio telescope, the largest in the southern hemisphere.

Following exhaustive investigations, the source proved to be much closer to home - the microwave oven downstairs below the 64 metre dish, where staff were cooking their frozen

dinners, according to Australian Associated Press.

Professor Backus told a conference of the American Astronomical Society in San Antonio, Texas, that a sign has since been stuck on the microwave, asking staff not to use it when the telescope is being used.

**Support the
advertisers
who support
Amateur Radio
magazine**

International Amateur Radio Union Monitoring Service (IARUMS) – Intruder Watch

Gordon Loveday VK4KAL*

The IARU Monitoring System – Part 3

(See January and February 1996 issues of *Amateur Radio* magazine for parts 1 and 2 of this continuing series about the IARU Monitoring System.)

Section 5 – Personnel

1. Personnel

Personnel in any section of the Monitoring System are, in general, volunteers. Their experience will range from a few weeks to many years. Some may not hold a transmitting licence, that is they are SWLs only.

Technical knowledge of monitoring personnel may vary from the simple to the very complex. Regardless of their level of skill, ALL monitors are capable of providing useful input to their section of the Monitoring System.

2. Equipment

The basic equipment of any monitoring station is a radio receiver, and a pair of ears (one will do!) plus the operator's ability to learn the limitations of each. The degree of sophistication that may be achieved beyond the basics is entirely a matter for the operator concerned. In some cases the national societies provide equipment for the use of their Monitoring Service management.

3. Hours of Work

Being volunteers, monitors must be free to dedicate as much of their time to the Monitoring System as their personal commitments permit. Within that framework a monitor should strive to apply time to a specific task that may be set by the Manager (Co-ordinator) or to general monitoring for a minimum of two to three hours each week.

It is suggested that LESS than two hours weekly results in loss of familiarity with patterns on the bands being monitored.

4. Types of Monitoring

Monitors who wish to specialise in specific types of transmission, ie A1A or F1B only, should do so. Each complements the other. Some observers prefer a particular band. This is encouraged. The end result is a person with an intimate knowledge of the particular band.

5. Pointers

Amateurs with previous monitoring experience or technical qualifications, will find the following discussion very basic, but basic pointers are included for those with limited know-how.

6. Receivers

The modern radio receiver, with its in-built frequency counter and digital display, makes for reasonable accuracy in

frequency measuring. But not all amateurs can afford such equipment and may have to rely on older designs. The dial readings of these older units can be improved by maintaining the operating room at an even temperature, using a crystal calibrator to check dial accuracy against a recognised frequency standard such as WWV, and making allowance for errors.

All calibrations should be done on the band and in the mode being used to detect the intruding signal. It is not appropriate to dictate absolute standards because the equipment in use by monitoring stations varies. However, allowances should be made, where applicable, for any in-built frequency offset that results in erroneous dial readings of the measured frequency.

*Federal Intruder Watch Co-Ordinator. Freepost No 4 Rubyvale QLD 4702 or VK4KAL @ VK4UN-1

Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make:	ICOM
Model:	IC2GAT
Serial Number:	726-001849
Type:	Handheld
Accessories:	Wall charger
Modifications:	Engraved with VK4QO, VK3QG, VK6BAM
Stolen from:	Yeppoon, QLD
Date:	7 December 1995
Other items taken:	Cobra SR15 Handheld scanner, s/n 83000144, engraved VK4QO, VK4QG
Reported to:	Yeppoon Police
Owner:	Ron O'Grady
Callsign:	VK4QO
Contact details:	079 395 158

Make:	Yaesu
Model:	FT212RH
Serial Number:	21960647
Type:	2 m mobile transceiver
Accessories:	1/4 wave magnetic mount antenna
Stolen from/with:	White 1987 Ford Fairmont Ghia
Date:	31 December 1995
Owner:	Nick Philippa
Callsign:	VK1NK
Contact details:	6 Macquoid Pl, Kambah ACT 2902

Packet World

Grant Willis VK5ZWI*

Introduction

First of all, welcome everyone to 1996! This year I hope to maintain a slightly more regular column, starting with a series compiled by John Woolner VK1ZAO for the Canberra Packet Radio Group's Technical Symposium which was held last year. The first series is going to cover the basics of Packet Radio transmissions and look at how AX.25 packet radio, and later TCP/IP packet radio, works. Other topics that are intended to be covered this year include the "DUAL" protocol designed by Warren VK1XWT and also a look at the Amateur Wormhole Networks and how to get the most use out of them. If anyone has any topics they would like me to cover, please send in your suggestions!

Introduction to AX.25 and TCP/IP

John Woolner VK1ZAO

Abstract

AX.25 is a protocol that all Amateur Packet users use, but also one that very many do not understand. This paper seeks to present an introduction to "AX.25" and "TCP/IP over AX.25" as used in Amateur Packet Radio, at a level that will be comfortable to the beginning packeteer, but still informative to those with more experience. Maybe, with some insight into the functioning of packet radio, we can all help make the system hum along much better. We shall take a little about the history of packet radio, the topology of a typical amateur packet radio "cell", the IOS-OSI layer model, the AX.25 protocol, CSMA and TCP/IP as implemented over AX.25.

Packet Radio the Early Days

Amateur radio is not the only user of packet radio, nor was it the first. The Aloha network was first operational in 1971. This system uses packet radio to link seven campuses located on four different islands to the central campus in Honolulu. This is a Star Topology with each node talking only to the central node, but some outer nodes are not able to hear each other (sound familiar?)

PRNET ran in the San Francisco Bay area for four and a half years from December 1979. This was an experimental network for the testing and development of packet radio and its protocols, consisting of four or more base stations communicating with mobile vans.

Amateurs have been involved in packet

radio since the late 1970s when Canada relaxed its rules. Following this was the adoption of AX.25 as the standard link level protocol in 1982, initial experiments with TCP/IP about 1985, and NET/ROM, TEXNET and ROSE by about 1987.

Topology of an Amateur Radio Area

One of the things that really confounds the establishment of an Amateur Radio Network is the resultant interconnection of the hosts.

* We do not want to force stations to communicate only with "Master" stations, ie BBSs or Cluster controllers; all stations therefore share an equal weight in the control of the network.

* We do not want to force only one pair of stations to communicate on a frequency or pair of frequencies; we share a single or pair of frequencies with all those in the area much the same as all computers on an Ethernet LAN can share the one interconnect cable.

* It is certain that some stations will not be able to hear other stations (hidden transmitter):

Station A talks with station B but cannot hear station C

Station B can hear station A and station C

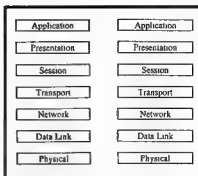
Station A may send a packet to station B at the same time that station C sends a packet - leading to corruption of the data received at station B.

* It may be that a station in an exposed location can hear a large majority of stations including those well out of its service area. This station may unduly limit its own transmissions.

* Some stations may logically belong to two or more areas at the same time.

The Amateur network in any one area can therefore be modelled as an interlinked series of "broken bus-topology" segments.

**Tell the advertiser
you saw it in the
WIA Amateur
Radio magazine!**



ISO-OSI Layered Protocol Model

"Protocol" - *Observance of official formality and etiquette - formal statement of a transaction. [Concise Oxford]*

To establish communication between two parties, we must define the rules and functions required to accomplish that communication. The International Organisation of Standardisation (ISO) has defined a layer of protocol levels to help facilitate development of data communications between computer systems. The classic ISO model has seven layers:-

In this model each layer only needs to be able exchange data with the layers immediately above and below it. Each layer needs only to be able to understand messages from its companion layer in another stack. A protocol stack built in this manner allows for specific tasks to be defined at each level greatly easing the design of the communication mechanism.

Let's describe each level of the ISO model in an ideal implementation, remembering that, in the real world, some of these functions may in fact be assigned to layers other than those I will describe, and in some cases the separation of layers may be rather confused.

* **Physical:** Responsible for the physical transfer of data from one location to another.

* **Data Link:** Usually associated with flow control over the physical link and possibly also data integrity (error control)

* **Network:** Route selection - best way to get the data to the destination

Congestion Control - the amount of data queued for transmission.

Data sequencing and Error Control.

Multiplexing - several different transport protocols may be being used on the one physical network.

* **Transport:** Additional flow control mainly concerned with ensuring that faster hosts do not flood slower hosts.

* **Session:** Users interface to the Network - establishment of connections, access security, recovery from broken connections.

*** Presentation:** Message interpretation – understanding that a request is for a particular service, and the location and format of various parts of the message.

*** Application:** The program that actually performs the task, eg file server, printer server or read keyboard and display text.

So, for example, the Data-Link layer knows how to take data from the Network layer and pass it to the Physical layer (and vice-versa). It does not know how the Network layer got the data, or how the Physical layer will move the data across the Network. It does, however, know how to tell the Data-link layer of another stack to slow down (or speed up) and also how to tell that there has been a transmission error.

The Network layer knows how to pass

data to the Data-Link layer and to one (or possibly more) transport layers. We may be running TCP/IP and NETBUI on the one Ethernet cable – or NET/ROM and TCP/IP and AX.25-L3 on the one radio channel. It may have to re-sequence data that has been received out of order, or flag that a packet has been lost.

Conclusion

Next month, John VK1ZAO takes a look at the AX.25 Link Layer, giving details of what is inside each of the packets that people transmit.

**C/o GPO Box 1234, Adelaide SA 5001
Packet: VK5ZWI @ VK5TTYI@DLI.SA.AUS.OZ
Internet: gwillis@eleceng.adelaide.edu.au*

Pounding Brass

Stephen P Smith VK2SPS*

This month we will look at "Signal Reporting".

What is signal reporting? It's a means of informing another station about the quality of his/her radio transmission. Signal reporting is internationally recognised throughout the world and is known as the "RST" system. RST stands for Readability, Signal Strength and Tone.

Each part of the RST system is broken down and given a particular number. For example, Readability ranges from one to five. Each number is given a particular meaning relating to readability, with 1 being the lowest and standing for **unreadable**, and 5 being the highest indicating **perfectly readable**.

This system also applies to Signal Strength and to Tone. However, instead of being graded 1 to 5, these two are graded from 1 to 9. To help you understand look at the following:

The RST System

Readability

- 1 – Unreadable
- 2 – Barely readable, occasional words distinguishable
- 3 – Readable with considerable difficulty
- 4 – Readable with practically no difficulty
- 5 – Perfectly Readable

Signal Strength

- 1 – Faint signals barely perceptible
- 2 – Very weak signals
- 3 – Weak signals
- 4 – Fair signals
- 5 – Fairly good signals
- 6 – Good signals
- 7 – Moderately Strong signals
- 8 – Strong signals
- 9 – Extremely strong signals

Tone

- 1 – Fifty cycle AC or less, very rough and broad
- 2 – Very rough AC, very harsh and broad
- 3 – Rough AC tone, rectified but not filtered
- 4 – Rough note, some trace of filtering
- 5 – Filtered rectified AC but strongly ripple-modulated
- 6 – Filtered tone, definite trace of ripple modulation
- 7 – Near pure tone, trace of ripple modulation
- 8 – Near perfect tone, slight trace of modulation
- 9 – Perfect tone, no trace of ripple or modulation of any kind

Tone in the RST system is something a lot of operators don't fully understand. Nearly everybody I hear gives T9, *perfect tone, no trace of ripple or modulation of any kind*.

Maybe it's just for convenience sake so as not to upset the other operator by giving him a poor report? In any case, be honest with him; even if he goes QRT, you know you have done the right thing.

The Tone report refers only to the purity of the signal and has nothing to do with its stability or the freedom from *chirps* or *key clicks* which are more common with home brew equipment. If the signal has the characteristic steadiness of crystal control, with no drift whatsoever, add an X to the RST report, eg RST 459 X. If the transmission contains *chirp* or *tail*, either on break or make, add C, eg 478 C.

If it has clicks or any other transients, add K, eg 468 K. Under certain circumstances the transmissions might contain both key

clicks and chirp. In this case add both C and K to the RST report, eg RST 458 CK.

Unfortunately, we don't have many reports like this on the air today, as most publications only mention the standard RST System. If it could be incorporated with the RST it would give the operator a better understanding of his or her transmission.

The operator could easily send QSD (*your keying is defective*) which could mean a number of things I would then ask the operator in question what difficulties he is experiencing with my transmission. This could turn out to be a lengthy process, without even taking into account band conditions at the time. This could easily be rectified by sending either X, C or K, or a combination of these as described above, which could be sent in one over.

If you are honest with an operator, especially if his signal contains key clicks or chirp, and you advise him of the problem, I'm sure he will appreciate the report so that he can rectify the problem as soon as possible. If no one tells him that he's putting out a really rough signal, then he will continue sending, not realising the interference he may be causing to other band users.

This is so when working Russian stations. Most Russian operators do not use commercial radios. The majority of their transmitters are home brewed, and often suffer a lot from chirp and other associated problems. Here are some phrases you can use and send to our U friends:

Your signal is very bad
U WAS OYBNX PLOMOJ SIG
You have got harmonics all over the band

OT WAS MNOGO GARMONIK PO DIAPAZONU

Your signal is very wide
WAIH SIG OYBNX III I ROKU
(III = — Y = —)

Remember common sense, a good working knowledge of the RST system, plus experience, make you a more professional operator.

In any case have fun with the Russians.

**PO Box 351 Morna Vale NSW 2103*

**Support the
advertisers who
support Amateur
Radio magazine**

Repeater Link

Will McGhie VK6UU*

E Band to 6 m

The difficult part of converting the Philips E band 828 to six metres is the exciter. Not too difficult, but requiring the most modification. Don VK6HK converted an E band 828 to six metres for our replacement 50 MHz beacon in VK6, using a different approach. The conversion followed the G band 828 idea. The G band is the 35 MHz version of the 828, rare, but can be found.

The E band 828 was not designed to go as low as 50 MHz and will not without modification. Rather than push the VCO lower, the alternate approach is to tune it higher to twice the required frequency and then divide it by two. The VCO was designed to go as high as 90 MHz and the extra 10 MHz or so does not seem to be a problem.

The divide by two circuit already exists in the 828 design, so it only requires changing the take off point from the VCO directly, to the output of the divide by two

circuit. Also required is the crystal reference oscillator running at twice the frequency. This is no problem as the oscillator works fine at 12 MHz while not without modification at 6 MHz. The phase mod coils are tuned to 12 MHz rather than 6 MHz.

Hopefully, the block diagram will make it clear. The top diagram is the standard 828 and the lower diagram the modification. Unfortunately, there is not enough drive from the divider circuit and an amplifier is needed between the divider and the power amplifier. The design shown is from the G band 828. I don't know if the BSX20 transistors can be found easily but other types could be used.

I have not tried this conversion idea but it sure works on the VK6 50 MHz beacon. The beacon is FSK and does not use the phase modulator on the exciter board. One concern is, as the phase mod coils operate at 12 MHz rather than 6 MHz, it may be

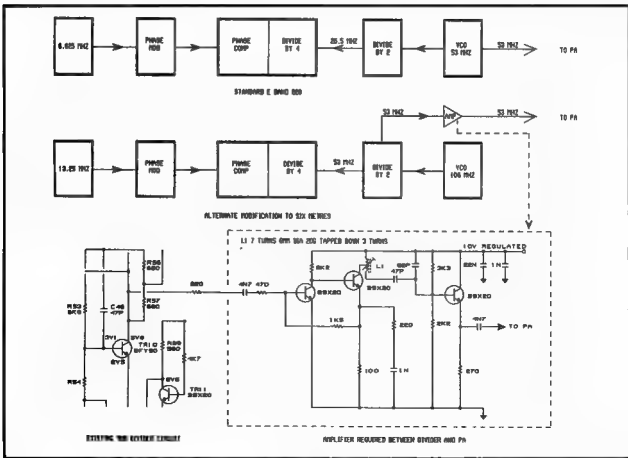
difficult to obtain sufficient deviation. I don't know the answer to this. Also the phase mod coils may require a reduction in capacitance in order to resonate.

You may like this approach and try the idea. Let me know how it works on 53 MHz.

Changing Frequency

As mentioned before in *Repeater Link* the changes to repeater licensing are resulting in increased costs. One such example is where a two metre repeater is forced to shift frequency due to unsolvable pager interference. In the past, this was annoying but involved only time and the cost of crystals and a couple of site visits. Now the SMA charge for the frequency change! Due to no fault of the repeater, a frequency change is forced due to interference to our prime two metre band and we are charged for the administrative costs. This is unfair and is the result of bad spectrum management by placing pagers so close to two metres. Why should the amateur community have to pay for someone else's poor management?

As an example I read a packet bulletin released by Stan VK2DDL on a frequency



change of VK6RGL. The packet information was brief so I asked Stan for details on the frequency shift. This is his reply.

From:
VK2DDL@VK2EO.NSWAUS.OC
To:
VK6UU@VK6BBR.#PER.#WA.AUS.OC

The records of our pager problems extend back over seven years and are far too extensive to document in full. In any case, the details are already known to the SMA in Newcastle.

In summary, the repeater channel was allocated initially by the WIA NSW Divisional Repeater Committee and was not requested by our club. Pager interference was encountered on the input frequency of 147.975 MHz soon after commissioning the repeater. It took some time to identify the problem as a transmitted third order harmonic (2A-B) resulting from a mixing of two pager frequencies and resulting in a spurious signal on 147.9875 MHz. It also took some time to convince the SMA that the interference was not a receiver front-end overload, by establishing that the nearest pager installation was some 25 kilometres away.

A Radio Inspector eventually visited the repeater site and took directional measurements which revealed two sources of the spurious signals, both being Telecom pager installations having transmitters on the two frequencies involved working via a combiner into common aerials. Non-linearity in the combining unit was responsible for generation of the spurious signal. The problem was cured by the insertion of "circulators" or rng isolators in each aerial circuit.

There was freedom from pager noise for one or two months and then a further spurious signal appeared on 147.9625 MHz. This signal was again traced to a different third order harmonic generated in the same way as before. One source was traced and cleared by the SMA in the same way. However, a second source was found to be outside the Newcastle jurisdiction. Approaches were made to the SMA Sydney office for investigation, but little action was taken. It was learned that more and more installations of this pager combination would be made, and that most would not be equipped with circulators, which were expensive.

Our club decided that we would apply for a frequency change for the repeater. This was initially unsuccessful because of the unavailability of a repeater channel. We then learned that the Westlakes club to our south had a repeater on 147.7/147.1 MHz at Mt Arthur, near Muswellbrook, which had been closed down for some years

because of co-sited pager interference and the same lack of an alternative frequency. We investigated the band-plan and came up with a suggestion of a frequency change for Mt Arthur which seemed compatible with existing users and which would free its existing frequencies for our use. The Westlakes club agreed and joint applications were made to the WIA NSW Divisional Committee, NTAC. Their passage through NTAC was facilitated by the NTAC chairman, who is a member of both clubs. Approval was forwarded to the SMA and the frequency changes effected.

Both clubs were charged for the frequency changes at \$91 per hour for periods of 1½ hours - \$136.50.

If further detail of any aspect of this history is required, please advise me and it will be supplied if available.

Regards,
Stan Ellis, VK2DDL.

Due to no fault of a repeater installation, a shift in frequency was required and the SMA charged for doing the pager work. It could be argued that the repeater receive frequency of 147.975 is asking for trouble, being so close to the pager band, and I mean close! But the point is, it was the only frequency available and is an amateur repeater input in an amateur band. It is the pager band that is at fault. It is an engineering impossibility to put a receiver on 147.975 and not be affected by pager transmitters only tens of kilohertz away. What this means, in effect, is the top end of our two metre band must be interfered with by pagers. It is just not possible to put high power transmissions so close to any receiver no matter how good it is and not expect it to be interfered with. To rub salt into the wound we have to pay for the problem. I believe this to be wrong.

More examples like this need to be documented and sent to the WIA for presentation to the SMA. The SMA are prepared to listen to our problems and this may result in engineering standards being imposed on pager installations. At the moment there appears to be few installation standards on pagers. To give you an example. At one of our repeater sites in Perth, on a high mast of 250', two pagers are installed, each running into

separate antennas. The antennas overlap by two thirds of their respective lengths, and are separated horizontally by only 1.3 metres! That is right, the pager antennas are very closely coupled together. The radiation of one pager into the other pager via this close antenna spacing would be very high.

Many watts from one pager are able to find their way back into the power amplifier of the other pager. This not good. Mixing can occur in each other's power amplifiers with the likely result of other frequencies being radiated. Neither of these pagers are fitted with cavity filters or isolators to reduce energy from coupling between the pagers. Poor engineering aside, the pager company believed the antennas were vertically separated by at least two metres. When it was pointed out this was not the situation, the antennas were vertically separated by three metres.

How many other pager installations are poorly installed causing problems? The pager company may believe it has done the right thing but it is possible that whoever installs a pager antenna may not know of the problems caused by close spacing. The antenna installer may not know what antenna it is next to the antenna he is installing.

In fairness to pager companies, some installations are of a high standard. I have seen such an installation in Perth. Two pagers on the one site, each with large cavity filters and isolators. The antennas are separated by the recommended distance. These standards need to be applied to all pager installations. It won't fix most of our pager problems, as they are receiver caused, but it would fix some of them.

By the way, the SMA officer in the field knows of the problems pagers cause. It is not these SMA people that need convincing but senior SMA people who may not be aware of the pager interference to our two metre band.

If you have had problems with pagers, or are having problems with pagers, document it and send me the details. I will see the information makes it to the WIA

*21 Waterloo Crescent, Leamurrie 6076
VK6UU @ VK6BBR
ar

**Copies of Amateur Radio articles.
Photocopies of any article published in a
back issue of Amateur Radio are available
to members at \$2.50 each
(plus \$2.00 for each additional issue in
which the article appears)**

Spotlight on SWLing

Robin L. Harwood VK7RH*

Well, Autumn is here and already I am noticing big changes in propagation. The higher frequencies this summer were rather disappointing and are rapidly dropping off, whilst the lower allocations are becoming increasingly active in the daytime to early evening. The word is that a new sunspot cycle is under way and we have reached the lowest trough of the previous cycle. Now the long haul upwards.

This month also sees the majority of broadcasters on HF alter both their times and frequencies to take account of the introduction of daylight saving in the northern hemisphere. Some minor alterations will take place on 3 March at 0100z. But most of these will be taking place on 31 March when, by international convention, the majority of Europe and the CIS adopt daylight saving. North America changes at the end of next month.

Also, Radio Canada International is due to cease broadcasting on shortwave from 31 March. A predictable outcry was made when it was announced early in December. The majority of those leading this has been

expatriate Canadians, followed by the loyal worldwide RCI listeners. Apparently, the parent public broadcasting organisation, the CBC, have had severe budgetary cutbacks and could no longer keep RCI afloat. They passed the buck back to the Canadian government through its Foreign Affairs Ministry, who previously helped fund RCI. Several of those wishing to save RCI started to fax the Canadian PM and even posted his fax number on the Internet. The story even made it on to the Canadian domestic print media, yet it seems to have had no effect. The closures will go ahead on 31 March.

However, the transmitting centre in Sackville, New Brunswick is also utilised extensively by other co-operating broadcasters, such as Deutsche Welle in Cologne, the BBC World Service, Radio Austria International, Radio Korea International and Radio Japan. This site is used for North and Central America yet propagates further than that. If Sackville is retained by these international broadcasters, perhaps we will continue to hear Canada on shortwave but, alas, no Canadian-based programming.

For many years, Teheran has been easily heard during our daylight hours on 15084 kHz. Most of the broadcasts are in Farsi, which is the main language in Iran, but I have heard French and Spanish programs. Imagine my surprise to hear the "Voice of the Islamic Republic of Iran (VOIRI)" in English coming from Teheran! I heard it on 11835 kHz at 1130z. The broadcast was at fair to good strength, yet the audio quality was poor. There was a very nasty hum present, which was annoying. They announced several parallel channels but the only one audible was well underneath the VOA Indonesian service. Program content was also interesting, being naturally pro-Shi-ite and quite anti-Western.

Interesting to note, also, that one of the intruders from the past has made a re-appearance on the 40 metre ham exclusive portion. It used to be known as the Funnan Front Station and the "Voice of the PLA", but has now been largely absorbed into the main Central People's Broadcasting System and the Taiwan Network. Based opposite the Taiwanese Straits near Amoy, it is targeted at the tiny islands off the Chinese mainland and Taiwan itself.

Tensions have markedly increased ever since the Americans allowed the President of Taiwan to visit the US for a college reunion last year. Beijing regards Taiwan as a renegade province and made several missile tests very close to Taiwan. The re-appearance of this clandestine station on 7080 kHz, between 1100 and 1130z, may have more to do with propagation, however. The CPBS Taiwan Network was on 11000, 11040 and 11100 kHz, but not lately.

The NATO IFOR Operation in Bosnia has been under way since December and there is an extensive airlift backup and resupply network. Quite a lot of flight movements are being co-ordinated over Europe and the North Atlantic on 11175 kHz. This channel is quite busy at times as it carries most of the American Defense Networks worldwide. Listening there brings back memories of the days when there were thousands of aircraft in the Pacific en route to Vietnam. They were very audible too, even on a dual-wave Philips 2262 that didn't have an inbuilt BFO for resolution of SSB.

Well, that is all for this month. Don't forget if you wish to contact me on e-mail, you can reach me at robroy@tamarcom.com.au and I have renewed my Iridonet account. It is 3.670/301. Until then the best good listening and 73

*52 Connaught Crescent, West Launceston TAS 7250
VK7RH@VK7BBS.LTN.TAS.AUS.OC
Internet: robroy@tamarcom.com.au
Iridonet: 3.670/301

WIA MORSE PRACTICE TRANSMISSIONS

VK2BWI	Nightly at 2000 local on 3500 kHz
VK2RCW	Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
VK3COD	Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
VK3RCW	Continuous on 144.975 MHz, 5 wpm, 10 wpm
VK4WIT	Monday at 0930 UTC on 3535 kHz
VK4WCH	Wednesday at 1000 UTC on 3535 kHz
VK4AV	Thursday at 0930 UTC on 3535 kHz
VK4WIS	Sunday at 0930 UTC on 3535 kHz
VK5AWI	Nightly at 2030 local on 3550 kHz
VK5RCW	Continuous on 144.975 MHz, 5 wpm to 12 wpm
VK6RCW	Continuous on 147.375 MHz, 4 wpm to 11 wpm
VK6WIA	Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz

Update

WIA DXCC Standings (page 22, February 1996 Amateur Radio)

Due to a simple keying error in the Federal Office WIA DXCC Standings computer database, VK5UO, with a listing of "99/101", was accidentally elevated to the top of the Phone Honour Roll from his correct position at the bottom of the General Listing (the listing was keyed in as "99/101" instead of "099/101"). And, as "Murphy's Law" will always have it, the keen eyes of the proof-readers (who generally don't miss much) missed this mistake.

Our apologies to both VK5UO and VK6RU.

It might be a good idea to correct your copy of the February 1996 issue of *Amateur Radio* now.

VHF/UHF - An Expanding World

Eric Jamieson VK5LP*

All times are UTC

News from VK6

Wal VK6KZ and Neil VK6BHT have extended their distance worked on 24 GHz. At Christmas, Neil operated from Reabold Hill in Perth. Wal went first to Karnet, a lookout point on the edge of the Darling Scarp south of Perth, and they worked the 57.1 km path at 5x8. Proceeding further south and over a non-optical path of 69.2 km. Wal worked Neil at 5x2 each way. This will be a claim for a new Australian record. Also, the 10 GHz 378 km path to Geraldton is being thoroughly explored by Neil VK6BHT and VK6KZ with almost nightly contacts.

Wal said: Your January comments regarding the probable VK2XSO 24 GHz contact were of interest. I was unable to find a phone number for him. The distance of 396 km is the current world record and was achieved with narrow-band equipment so that if achieved with wide-band gear, we all would like to know who participated, what was the path and the prevailing conditions. I think that someone answers your query.

The VK6 VHF Group Field Day was successful with serious efforts made by several operators new to portable activity. Notable in the field were Bob Pine VK6ZF, Bruce Douglas VK6BMD, Al Edgar VK6ZAY, Terry Leitch VK6ZLT and myself VK6KZ. Activity included all bands to 10 GHz (with the omission of 5.7 GHz due to the absence overseas of the organiser Alan Woods VK6ZWZ).

Terrestrial activity on 2400 MHz has increased. VK6KZ was portable at Torbay (25 km west of Albany) on 16-17/1 and, besides working into VK5 on 144, 432 and 1296 MHz, heard the VK5VF beacon on 2403.450 MHz at 519 between 1645 and 1725. It may have been there earlier and later but most attention was given to 10 GHz, where tests with Roger VK5NY/p between 1610 and 1730 were unsuccessful.

50 MHz has at last shown some life in the Ross Hull period after being lively prior to Christmas. The best opening may have been on 19/1 when John Pearce VK6JJ worked over 40 stations including ZLs. Dunning that opening Ross Tolchard VK6KAT worked David Minchin VK5KK on 144 MHz sporadic E, about 2000 km. Alerted by hearing Ross, VK6KZ also worked David at 0744. As expected, nothing was heard by VK6KZ of a test transmission on 432 MHz by VK5KK.

Al Edgar VK6ZAY/p at Busselton, about 190 km south of Perth, had contacts on 144, 432 and 1296 MHz with Alan Woods VK6ZWZ, but little success on 2.4 GHz. Conditions were not good during the attempts.

A few comments about the Ross Hull Contest Rules. The scoring table needs a revamp. The latest effort to fix the 50 MHz points has been a disaster with efforts by a serious operator on that band not really warranted. VK6ZL at 10 points! It is far easier to use gunnplexers on 10 GHz across town for 16 predictable points. One would need to work 26 ZLs from here to exceed a month of contacts on 10 GHz! The time commitment for six metres can be overwhelming for little reward!

I am, of course, biased, but at least knowledgeable regarding the microwave bands. Relating points to uniform 100 km rings for all bands ignores the real challenges. For example, exceeding the world record distance of 396 km on 24 GHz would bring only 64 points.

Notwithstanding these comments, I think that having points for minimal distances on 50, 144 and 432 MHz are worth retaining for the benefit of encouraging activity. The excellent system of limiting log entries for the best 100 contacts takes care of the issue of those who would simply accumulate local contacts.

I would like to see the re-introduction of a table of band, distances and points which reflect the best estimates of propagation and degrees of difficulty. I will be passing these comments to John Martin, Contest Managers are sitting ducks for criticism but are to be admired for their efforts to encourage activity and give everyone a fair go.

VK5KK Returns in the Bands

The big day was 13/1/96. David VK5KK is now operational on 50, 144, 432, 1296 and 2401 MHz, using a 12 m self-supporting tower QTH PF95IF, 180 metres ASL.

VK5KK Portable Operations

I can operate portable on the following frequencies. When I say portable I mean carry up the hill with two hands portable!

144 MHz: 10 watts to a three element beam, useful for good sites as a link for higher frequencies. **1296 MHz:** 10 Watts to a 22 element if necessary, otherwise using a one watt hand held. **3456 MHz:** five watts to a 60 cm dish, but I haven't found any one else with gear to operate portable. I have a

second transverter which I can loan out! All SSB narrow-band stuff.

10368 MHz: one watt portable to a 60 cm dish, SSB, etc. Actually I have two complete 10 GHz stations, the old one runs 200 mW to a 60 cm dish and can be loaned to anyone prepared to go narrow-band mountain topping. Other bands are possible, eg 432 MHz. For 2403 MHz I am working on a five watt transverter I can run one watt on 2304 MHz where still permitted!

Summary of Workings

Dunning Field Day contest, 13/1, I worked VK2EFA/p at Broken Hill on 144.110 MHz at 1305. 16-17-18/1 open to VK6 via tropo. VK6KZ/p heard VK5VF beacon on 2403.450 at 1645, which adds weight to the selection of this band as a useful propagation indicator for western path tropo openings on SHF.

Using VK5VF on 2.4 GHz as a prime SHF westerly indicator is possibly the most accurate tool for 10 GHz. The evidence of two loosely separated types of openings:

(1) Those that peak at 144 MHz and become worse as you go higher; and

(2) Those that seem to favour a much higher frequency, typified by good conditions on 432/1296 leading to 2, 3 or 10 GHz conditions.

COM-AN-TENA

(formerly A. J. & J. Coman Antennas)

6M std 6 ele 40 mm boom	\$216
2M col/linear 2 5/8 Tdbd	\$ 97
12 ele 2M broad B/width	\$135
160M vert top loaded	\$327
6 M col/in 6 dbd rad 4.9NEW	\$157
6 ele 6 M N.B.S 50 mm Boom	\$310
Duo 10-15 M	\$295
3 ele 15 M	\$199
3 ele 20 M	\$333
20 m log-yag array 11.5 dbd	\$755
M B Vert NO TRAPS 10-80 M	\$275
Trn beam HB 35 C 5 ele	\$890
40 M linear loaded 2 ele	\$516
13-30 M logperiodic 7 ele 7.62 Boom	
all stainless/steel fittings	\$730
70 cm beam 33 ele 19.9 Dbi	\$228
23 cm slot fed 36 ele brass cons	
s/solder-assembled. 18 dbd	\$170
80 m top load/cap/hat vert.	\$260
80 m rotatable dipole lin/loaded	CALL
2 m 144.100 2.2 wave-length boom	\$145

PLUS FREIGHT

BANKCARD MASTERCARD & VISA ACCEPTED

Call ANDY COMAN VK3WH.

**LOT 6 WEBSTERS ROAD,
CLARKFIELD 3429
PHONE 054 285 134**

It is not known just where the turn around frequency ranges are for this second mode of propagation. However, evidence suggests that this mode involves a relatively low level inversion layer, due to the timing of around 2-3 hours from sunset or sunrise.

Whilst 1296 MHz seems to peak with a good 432 opening, 2403 is high enough to suffer from differing path loss factors (and being 1/4 of 10 GHz), the aim of the exercise is hopefully to provide a more accurate warning for 3, 5 and 10 GHz. The beam pattern of the 2403 MHz antenna has been deliberately angled so its main lobe hits the Gulf waters (ie down about two degrees). Past experience shows that if you are above an inversion, you can sneak under it and bounce the first wave off water, as long as the layer is not too solid. Previous 10 GHz to VK6KZ in 1994 exhibited this same low angle, pointing at the water for best signals. Reports from Europe on Water Path Tropo on 10 GHz confirms that this layer can be as low as 100 feet! Maybe in ten years we will have a better understanding!

16/1 out portable at Mt Gawler, PF95JF, 540 m ASL. Worked VK5LP on two metres and heard him on 1296 MHz with a handheld (160 km). Worked VK5NC at Cape Northumberland on two metres (400 km), tried 10 GHz but no propagation. VK3ZQB (Port Fairy) and VK3XPD (Mt Macedon) both out portable on 10 GHz, conditions poor, only VK5NC worked VK3ZQB on 10 GHz. Too cold for VK5NY to go out!

18/1/96 worked Perth on two metres Es to VK6KAT and VK6KZ around 0740, band open for about ten minutes.

VK6VF Beacons

The 3456.45 MHz beacon will be installed in March, details as follows frequency 3456.450 MHz, F1 keying, power output 600 mW to a 14 dBi directional antenna pointing west.

Modifications to the VK5VF 1296 MHz beacon. The main directional antenna will be turned west, with a secondary Yagi beam fed via a power divider and pointed south east, 3 dB points will be 125° (Melbourne) and 155° (Mount Gambier) EIRP in this direction should be around 100 watts, about a 12 dB improvement over the current situation.

All reports/requests to be forwarded to VK5KK 018 825628.

Six Metres

Cliff Betson ZL1MQ writes that 1995 will be remembered for the exceptional conditions which occurred on the bands with the assistance of Es and weather fronts extending from the east coast of VK to all ZL districts.

50 MHz: The Es spread to all ZL districts but ZL1 enjoyed the most openings. After

an absence of several years, Jim VK9NS on Norfolk Island re-appeared on 10/12 and worked ZL4TBN. On 11/12 Jim worked ZL4TBN and ZL3NE. On 17/12 VK9YQS on Lord Howe Island worked ZL2KT, ZL4LV and ZL3TLG, and on 30/12 ZL1AKW, ZL1TMF, ZL1MQ and ZL3NE.

Double-hop Es appeared on 18/12 with ZL2AGI working VK6RO, VK6HK, VK6JJ and VK6YU. On 21/12 ZL2AGI to VK6HK, VK6JJ and VK6BE; ZL3NE to VK6JJ. These contacts were around 5500 km. On 24/12 VK6RH in Darwin was worked by ZL2AGI, and again on 5/1/96 by ZL3NE and ZL1MQ - distance about 5200 km. These contacts resulted in ZLs working all states of Australia, a feat not often accomplished in a few weeks.

There were scores of additional contacts between ZL and VK but reports have failed to be lodged. (I know the feeling Cliff, apart from VK6KZ telling me that VK6JJ worked more than 40 stations, including ZLs, on 19/1, I have not received ONE written report of December or January Es activity from VK stations! If it were not for your well documented information I would have little to report.... VK5LP)

144 MHz: First contacts to Norfolk Island occurred on 30/11 when ZL4AAA copied 100 MHz FM from there and phoned VK9NS to come on 144 MHz. Contact was made by ZL4AAA and ZL1IU.

The DX season on the band was the best ever and favoured the ZL1 area. ZL3NE/1 worked 80 VKs, ZL1TWR 28 and ZL2TAL worked VK2BA. Christchurch in ZL3 had contacts but there are no details. That area hears the VK 148+ MHz paging systems more often than ZL1.

Last month covered the period of ZL openings to 10/12. This report is from 11/12 to 5/1. On 50 MHz the band opened to VK on 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 27, 28, 29, 30, 31/12, 1/1 and 5/1, a total of 19 days in four weeks. Those worked were VKs 1BG, 1MJ, 2AIF, 2AKF, 2ANS, 2AXH, 2BA, 2BIT, 2BRG, 2FK, 2FLI, 2FZJ, 2KZU, 2PB, 2XKJ, 2YDC, 2YHN, 2YKN, 2YLO, 3ADM, 3AL, 3ALM, 3AMK, 3ANP, 3ATQ, 3AZJ, 3BRZ, 3DLM, 3DUQ, 3DUT, 3DY, 3JDO, 3LK, 3OT, 3OW, 3RZ, 3WN, 3XQ, 3YDE, 3YDF, 4AFL, 4AR, 4ARN, 4BKM, 4DO, 4GFS, 4JH, 4KK, 4KMA, 4KR, 4OE, 4PU, 5AKK, 5BC, 5BZK, 5KK, 5NC, 6BE, 6HK, 6JJ, 6RO, 6YU, 7AB, 8RH. ZLs to work them included ZL1MQ, ZL2AGI who each worked 57 and ZL3NE worked 152 stations. VK9YQS was worked on 17/12 and 30/12 by ZL1AKW, ZL1MQ, ZL1TMF, ZL2KT, ZL3NE, ZL3TLG and ZL4LV.

On 144 MHz stations were worked on 21, 24, 25, 27, 28 and 31/12, for 38 contacts additional to those published last month. Stations worked included VKs 2ADY, 2APG, 2BA, 2BBF, 2BZE, 2FLI, 2FZJ/4,

2VC, 2XKE, 2ZAV, 4ABW, 4ARN, 4BRG, 4DH, 4GFS, 4IC, 4JSR, 4KK, 4LP, 4PGS, 4RX, 4YOO and 4ZDR ZLs to work them were ZL1AVZ, ZL1HR, ZL1IU, ZL1TWR, ZL2TAL and ZL3NE. Thanks for the report Cliff.

There seems little doubt that the 1995/96 summer period has been exceptionally good on 50 and 144 MHz in particular, rivaling the results obtained in the northern hemisphere summer. 20/1 was particularly good with Australia-wide contacts possible. At 0453 I heard Ross VK2DVZ at 5x5 on 144.100 and quickly called him but received no reply as the band closed after 15 seconds!

Also on 20/1, at 0600 P29CW was working Melbourne to VK3AMK and VK3AMX in particular. At 0630 ZL3s were working many VK2s on two metres, the band having opened at 0230. I was still working ZLs on 50 MHz at 1030.

Beacon News

A fax from Andrew Perkins VK7KAP advises that the VK7 beacons are again operational, now from Kelcy Tiers near Devonport, the VK7RAE site. I assume the callsign is now VK7RAE not VK7RNW. Terry VK7ZTI, Andrew VK7XR, Ron VK7RN and Andrew VK7KAP were responsible for the re-commissioning. Favourable reports of their reception have been received from mainland users. The propagation from the new site, which is of similar elevation to Lonah, appears to be good. Frequencies are 50.057, 144.474 and 432.474 MHz, with work proceeding on another beacon to operate on 1296.474 MHz.

Special thanks are due to Ron VK7RN for providing continuing support for the VK7RAE site, as it is powered from Ron's domestic supply. This is in contrast to over \$1200 per year demanded by the Hydro Electric Commission.

VHF/UHF Field Day

The weather seems to make a habit of upsetting contacts in the annual 24 hour Field Day, this year commencing on 13/1. In some areas of VK5 temperatures rose to 41°C which can be decidedly uncomfortable if you are perched in a caravan or tent. Last year it was heavy rain!

Nevertheless, there were some good tallies as the final results will eventually show, but with many stations electing to use separate logs on each band, total contacts were not easily ascertained. From my home station I managed to chalk up helpful contacts on the bands 50 to 1296 MHz inclusive. An aurora around 0830 on 13/1 may have assisted some operators - VK3OT worked several Melbourne stations using that mode.

Transequatorial Contacts

Following the contacts between ZLs and JAs on 3/11 and to VK4 on 7-8/11, the TEP opened again on 15/1 from about 0545 when Asian TV was observed. From 0600 VK3OT worked JAs on CW in districts 2, 3 and 4. VK6RH in Darwin was also noted working JAs.

The occurrence of TEP on 15/1 came two days after the aurora. Also observed was P29KFS working Melbourne stations around 0500. Needless to say, it reinforces the view that one should never take six metres for granted, surprises are always occurring (especially await the news of a 50 MHz contact between Australia and South Africa via Antarctica, I am sure it will eventually happen).

Europe

Ted Collins G4UPS sent no news sheet with his December log coverage, but in the log he refers to the heavy frosts and snow they were experiencing. His daily QSOs with G3CCH and SM7AED seemed relatively unaffected by the cold conditions, with signals from SM7AED reaching 579 frequently, and 599 on 30/12. All three have small stations and antennas but they are good CW operators.

Recently, I asked Ted to elaborate on his regular contacts with G3CCH and SM7AED. He replied with a very interesting letter which should interest readers; I hope to include it in my notes when space is available.

Calling Frequencies

Again! The recent Ross Hull Memorial Contest and the VHF/UHF Field Day have brought the use of 50.110 in particular and also 144.100 MHz to the fore. Several strongly worded messages appeared on the packet system condemning the use of calling frequencies for contest contacts. Es contacts and testing of stations etc.

I often monitored 50.110 and 144.100. Certainly there were many CQ calls made on 50.110, but at least most operators did move to another frequency to continue the contact. I noted plenty of activity between 50.120 and 50.200. Those who remain on 50.110 don't care anyway and are unlikely to shift whatever may be said or written. Over the years I've done my best to have operators keep the frequency for international DX working, so it seems we are forced to live with the situation. It occurs overseas, so I assume it is a universal problem.

Personally, I would prefer that the matter be approached from another angle. For the purposes of all calling, except for international DX which remains on 50.110, we should mutually agree upon a VK/ZL call frequency, to be used only for establishing a contact before moving elsewhere. May I

have the lemnety to suggest that 50.130 MHz be established for such purposes. If all those who care, and they are the majority, want to originate a call on a set frequency, then use 50.130 and ignore those who call on 50.110, but you will need strength of character to do it!

I understand that Europe uses 50.125 as an Es and local calling frequency. Using 50.130 reduces the possibility of splatter on 50.110 from very strong SSB stations and key clicks from some CW stations. If 50.130 should not be used for a particular reason, then someone please tell me. To go back to 52.050 or 52.100 MHz, as has been suggested, is a backward step and is unlikely to be supported by six metre operators!

From here on, for VK/VK, VK/ZL and ZL/ZL contacts, let us commence calling on 50.130 MHz, then move HIGHER for a contact. By moving higher you leave a space for a genuine DX station to move off 50.110 after establishing contact. Set your second VFO on 50.110 so you can quickly switch to that frequency for monitoring purposes. DX calls on 50.110 should not mean you are seeking an answer from VK or ZL stations. Let us give it a try as of now. WIA members spread the word to others.

What's New

Bob Tait VK3UI* introduces new products of interest to radio amateurs

Casspak Modern

Geoff Page of the Australian Amateur Packet Radio Association (AAPRA) advises about the release of "Casspak" from AAPRA. As the name implies, "Casspak" is a simple packet modem built into a cassette case. Casspak comes complete with leads to connect it between the COM port of your computer and the radio.

AAPRA recommend that if you load Baycom software into your computer, you may obtain a registered copy and manual from AAPRA.

For further information write to AAPRA at 59 Westbrook Ave Wahroonga NSW 2076 or phone (02) 489 4393

Kenwood Open Day

Kevin Cavanagh and Kenwood will be holding an open day in Brisbane on 30 March at the Greek Community Centre, 29-31 Edmondstone St, South Brisbane at 9:00 am

If you want to see the latest in amateur equipment, mark this date in your diary. The event will be opened by the Wireless Institute of Australia Queensland Division President Mr G Sanders VK4KEL. A number of presentations will be held throughout the day.

From VK3SLX

Progress of Cycle 23.

The regression model (SESC) of Cycle 23 has been revised. The curve has been steepened and will be one-third the way to the peak by early 1998. It will depart from the projected curve about midway through next year with an SSN expected to be approx 75. The present SSN is 20 so its going to rise quickly. This projection is a mean approximation.

DXpedition VK9X and VK9Y/C

A German group, QSL via DK7NP, will activate Christmas Island VK9XY from 4/2, and Cocos/Keeling VK9CR until 23/2. Six metre operations will occur.

Closure

Out of space, must close.

Thought 1: Winning isn't everything - but wanting to win is; and

Thought 2: Bad conscience is a conscience doing its duty.

73 from The Voice by the Lake.

*PO Box 168, Meringue SA 5264

Fax: (085) 751 043

Packet: VK3SLX@VK3SLX.ADL.#SA.AUS.OZ

ar

New from Kevin Cavanagh

Kevin advises that he has a number of new items this month which include the:

- HAL Communications P38 DSP multi-mode data controller, a full size plug-in card for your computer which will run RTTY, AMTOR, Pactor and Clover II waveforms.
- Advanced Electronic Applications DSP 232 which uses the 32 bit Motorola 68340 processor and Analog Devices 2105 DSP; includes 17 modems in total including two BPSK satellite modems, and can handle new coding systems as they are developed, according to AEA.
- Patcomm PC1600, a state-of-the-art HF transceiver designed for digital modes of communication, with standard software supports for RTTY, ASCII, CW, AMTOR, Pactor, and packet, covers 1.5 to 30 MHz, and includes a direct IBM keyboard interface allowing full control

For further details contact Kevin Cavanagh on (074) 643 963 or write to 222 Brisbane Valley Highway, Wanora, QLD 4306.

*C/o PO Box 2175, Caulfield Junction VIC 3161

■

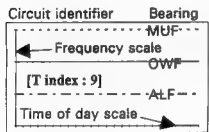
HF PREDICTIONS

Evan Jarman VK3ANI

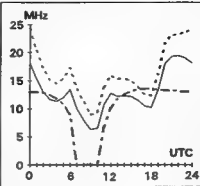
The Tables Explained

These charts were prepared using one of the IPS stand-alone prediction systems. They show the diurnal variation in ionospheric conditions. The legend below indicates how each of the frequencies is plotted.

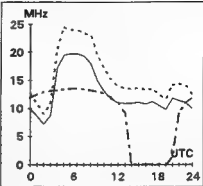
Those frequencies are -
ALF Absorption limiting frequency
MUF Maximum useable frequency
OWF Optimum working frequency
The T index used is shown in the legend.
Also included is the path bearing for the Australian station of each circuit. The short path is displayed unless indicated.



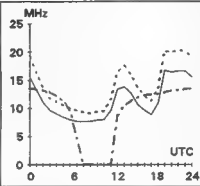
Brisbane-Barbados 109



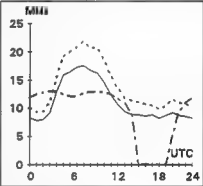
Canberra-Cairo 283



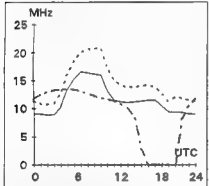
Brisbane-Boston 56



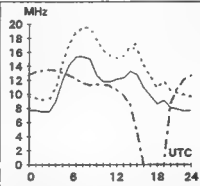
Canberra-Capetown 219



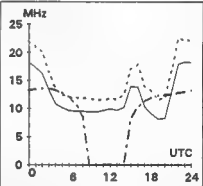
Adelaide-Amsterdam 313



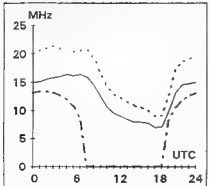
Brisbane-Brussels 323



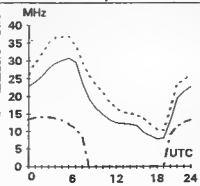
Darwin-Denver 50



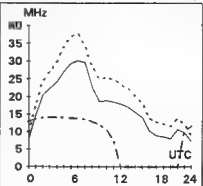
Adelaide-Auckland 104

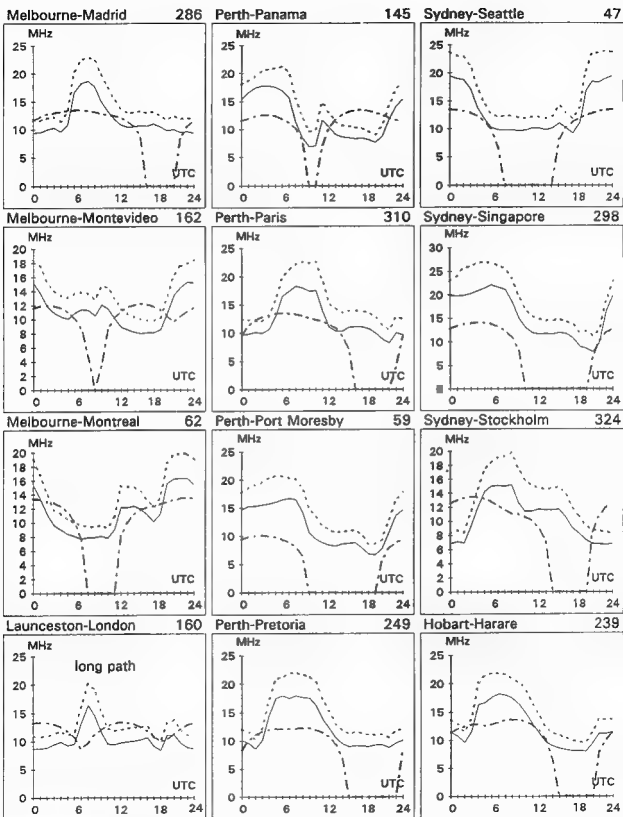


Townsville-Tokyo 353



Darwin-Dubai 298





HAMADS

TRADE ADS

- **AM/DON Ferromagnetic Cores** For all RF applications. Send business size SASE for data/price to **RJ & US Imports**, PO Box 431, Kama NSW 2533 (no enquiries at office please ... 14 Boony Ave Kama) Agencies at: Geoff Wood Electronics, Sydney Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World Melbourne and Mildura; Alpha Tongo Products, Perth; Haven Electronics, Nowra; and WIA Equipment Supplies, Adelaide.
- **WEATHER FAX** programs for IBM XT/ATs *** "RADFAX2" \$35.00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" \$45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, +137 MHz Receiv. *** "MAX.SAT" \$75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3 6 or 4 0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3.00 postage. ONLY from **M Delahunty**, 42 Villiers St, New Farm QLD 4005 Ph (07) 358 2785
- **HAM LOG v.3.1** - Acclaimed internationally as the best IBM logging program. Review samples. AR: "Recommend it to anyone"; The Canadian Amateur, "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology" ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just \$59 (+\$5 P & P), with a 90 page manual. Special 5 hour Internet offer! Demo brochures available. **Robin Gandevia VK2VN** (02) 369 2008 BH fax (02) 369 3069. Internet address mg@ozemail.com.au

FOR SALE ACT-VK1

- **Uniden 2020** transceiver, manual, mic, matching speaker, low pass filter, \$500. Anl **KWMatch**, \$100, **18AVQ**, 5 band vertical, \$100; **SWR** bridge, \$75. Set of 5 helical whips, spring mount, \$150. Ev **VK1BE QTHR** (06) 281 3301

NSW-VK2

- **Swan T/M 700CX** s/n 19372, power supply 230X, s/n 2253, crystal filter 16 pole. complete with circuits, spare valves 8950, \$700. **KDK FM2015A/E** 2 m/TM NR5581 with 5 amp power supply manuals. swr bridge, \$200. Large range home brew items. Lcd amateurs only. H Chapman (047) 33 4641.

- **Model 15 teleprinter**. Any offers? Noel **VK2YXM** (02) 871 3079.
- **10 el 2 m beam**, rotator, control, swr, coax, purchaser to remove, \$20. **Sullivan precision osc.** 0-12 kHz, rack 52 cm x 183 cm \$0; **Thorn TV** cam spare vidcons lens, \$20; **Aust GE PE cell unit**, timer, light source, \$10; **GR** (USA) precision "condenser", \$5, **Coil winder** trans, core bobbins, winding wires 30 spools, baking oven, \$30; **Square wave generator**, \$10; **Noise and distortion meter**, \$15. **Arthur Brown VK2IK QTHR** (02) 876 1465
- **Laptop Compaq**, 12V or AC, 286, LCD, \$200; **Faulty Compaq LTE-286** (no hardisk), \$100; **486 DX2/66**, 4/525, 14" SVGA monitor, key/b, mouse, \$1,200. **Neville VK2QF QTHR** (063) 73 8624.
- **Eddystone shipboard LF, MF and HF mantel Rx** in excellent working order, \$150; **BC221** freq meter, refurbished, with PSU, \$65. **Brian VK2GCE QTHR** (02) 545 2650.

VIC-VK3

- **Curtis prop pitch motor**, modified AC, condition as removed from service and purchaser collects, \$95. **Bill VK3WK** (055) 61 1376
- **FT101E**, ec, cables, workshop manual, no mods, \$500. **Ty RTTY, Tono 7000E**, manual, \$350. **On-glass antenna**, 144-174 MHz, new, \$90. **Bob VK3JY** (03) 9374 2416.
- **Kenwood TS660** Inbander, 21-24-28-50 MHz, with microphone and instruction book, \$475; **Kenwood TS520S** HF transceiver, with desk mike and instruction book, \$390. **B. Sparks VK3TCM** (050) 25 7297.
- **Yaesu FTD401** HF xcvt, 400 W o/p, **FV401** ext VFO, matching speaker, desk microphone, **YC601** digital display, all in vgc, used 10 times in last 6 years, \$600 ono the lot. **Steve VK3TSR** (018) 103 487 BH or (059) 64 7742 AH LAO
- **Antenna tuner MFJ949D**, \$200; **Electrophone CB TX840A**, as new, latest model, \$200. **Ken VK3WAL** (051) 52 3984.
- **Kenwood TS850S** HF transceiver, with inbuilt ATU, 14 months old, vgc, \$3,300. **Jim VK3NR** (03) 9367 6920
- **Estate clearance VK3MKC**. **Kenwood TS450SAT**, P832, \$2,200. **Icom R71A** HF receiver, \$1,000. **Icom R7000** VHF/UHF receiver, \$1,200. All equipment ono. Enquiries, **Lee VK3PK** (052) 50 1105 AH.

SA-VK5

- **Shack clearance**. Antennas, new and used radio equipment, RF adaptors, RFDS antenna base with spring, much more. All must be sold. Send SASE to PO Box 76, Peterborough SA 5422, or phone **Paul VK5MAP** (086) 51 2398.

- **Hills 12.6 m**, 2 section, cyclonic, triangular, **winch-up tower**, includes antenna, cable and guy wire. To be removed by purchaser, \$900. This is part of a deceased estate. Phone (066) 82 2168 for further information. **Henry VK5KUJ**

WA-VK6

- **Triangular Hills 75 foot**, three section, telescopic, **windup mast**, tilt over facility, with accessories, in excellent condition, \$400. **Sydney VK6HE** (09) 293 2347.

WANTED NSW-VK2

- **Australian and NZ WWII HF military comms** equipment and documentation. Pay cash or trade for US military similar. **Brian VK2GCE QTHR** (02) 545 2650 AH or fax (02) 221 7774
- **Morse keys**, especially **Mecograph** or **The McDonald Pendograph** or any unusual Australian keys or Jiggers. Pay top dollar for any of the above. **Steve VK2SPS** (02) 9999 2933 after 6.00 pm.
- **HF linear amplifier**, minimum power 400 W pcp. **R Jensen VK2BJE** (02) 9966 1150 AH or fax (02) 9966 1165.
- **D/F loop and visual indicator**, for a restoration of an R1155 receiver. I need a direction finding loop from an aircraft of 1940-80 vintage and a visual indicator instrument, which is a meter with two needles and a scale labeled L and R. Any help welcome. **Ray VK2ZON QTHR** (02) 489 8581.

QLD-VK4

- **TS830S, TS930S** or similar transceiver, must include narrow CW filter and be fully operational. **Russ VK4XA QTHR** (07) 3263 6812.

SA-VK5

- **Volt meter 0-20 V** 70 mm x 70 mm, must be in good condition and good working order. Also **EAT300** Emtron tuner (not cross needle), must be in good condition. **Paul VK5MAP** (086) 51 2398
- **Kenwood TR9000** 2 m transceiver, GWC and manual. **Enc VK5LP** (085) 75 1531 after 0000z.

MISCELLANEOUS

- The **WIA QSL** Collection requires QSLs. All types welcome, especially rare DX p tional cards, special issue. Please contact **Hon Curator Ken Matchett VK3TL**, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.
- Remember **HAMAD** in the December issue about giving away **Rola 33B magnetic tape reproducer**? Please read "Over to You" **Yuri VK5ZY5 QTHR** (08) 45 8492.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Weekly News Broadcasts	1996 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Rob Apathy Secretary Len Jones Treasurer Alex Colquhitt	VK1KRA 3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet www.amsat.org.au , and on the VK1 Home Page http://www.nla.gov.au/~cmakin/wiaact.html VK1HLJ VK1AC	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124 Phone (02) 669 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Eric Fossey Treasurer Eric Van De Weyer (Office hours Mon-Sat 11.00-14.00 Mon 1900-2100) Web: http://sydney.dialix.oz.au/~wiansw e-mail address: wiansw@sydney.dialix.oz.au	VK2YC 3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet www.amsat.org.au , and on the VK1 Home Page http://www.nla.gov.au/~cmakin/wiaact.html VK2EYF VK2KUR	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 9885 9281 Fax (03) 9885 9296	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC 3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet www.amsat.org.au , and on the VK1 Home Page http://www.nla.gov.au/~cmakin/wiaact.html VK3QV VK3NC	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 96 4714	President Geoff Sanders Secretary John Stevens Treasurer John Presotto	VK4KEL 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 26.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3426	President Garry Herden Secretary Laurie Hooper Treasurer Charles McEachern	VK5ZK 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 26.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 351 8873	President Cliff Bastin Secretary Mark Bastin Treasurer Bruce Medland-Thomas	VK6LZ 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 26.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$60.75 (G) (S) \$48.80 (X) \$32.75
VK7	Tasmanian Division 52 Connaught Crescent West Launceston TAS 7250 Phone (003) 31 9808	President Andrew Dixon Secretary Robin Harwood Treasurer Terry Ives	VK7GL 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 26.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			

Note: All times are local. All frequencies MHz.

Membership Grades
Full (F) Pension (G)
Ready (Q) Student (S)
Non receipt of AR (X)

Three-year membership available to (F) (G) (Q) graduates at fee x 3 times

ADVERTISERS INDEX

Aussales _____	32	Tower Communications _____	15
Com-an-tena _____	49	WIA 1996 Call Book _____	IBC
Daycom _____	IFC	WIA Membership _____	9
Dick Smith Electronics _____	27, 28, 29		
ICOM _____	OBC, 17	Trade Hamads	
Kevin Cavanagh _____	34	M Delahuntly _____	54
Radio and Communications _____	12	RJ & US Imports _____	54
Terlin Aerials _____	39	HAMLOG - VK2VNN _____	54

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore, advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

1996 WIA AUSTRALIAN RADIO AMATEUR CALL BOOK

on sale NOW at your Divisional Bookshop

**18000 Up-to-date Callsign Listings
Shortwave Listener Listings
Australian Repeater Directory
Australian Beacon Listings
Comprehensive Australian Band Plans
Complete DXCC Countries List**

And much more, such as Australian TV Frequencies, QSL Bureaux, Slow Morse Transmissions, Accredited Examiners List, Repeater Guidelines, WIA Awards, Australian VHF/UHF Records, New Zealand Repeaters and Beacons, International Callsign Series, and so on.

**As an active amateur radio operator can you afford
NOT to have this best yet Australian Call Book?**

DO NOT MISS OUT!

Limited Stock

Buy your copy NOW from your Divisional Bookshop

Cover Price \$15.00

Special Price to WIA Members \$13.00

All Prices plus Postage and Handling where applicable

ICOM

706

HF all band + 50 MHz + 144 MHz!

Powerful 100 W from HF to 50 MHz and 10 W for 144 MHz

101 memory channels with dotmatrix display

All mode including SSB, CW, RTTY, AM and FM.



Detachable front panel mounts any where.



The front panel photo is **Actual size.**

Super compact at 167(W) × 58(H) × 200(D) mm



For more information,
call your authorized Icom dealer.

Full functions to compete with big rigs

HF/50/144 MHz ALL MODE TRANSCEIVER

IC-706

For the full story contact Icom Australia

7 Duke Street Windsor Victoria 3181

Free Call: 1800 338 915

Ph: (03) 9529 7582 Fax: (03) 9529 8485